GE Healthcare

eBike II / eBike II L / eBike II EL

Service Manual

2018112-069 Revision B

MANUAL INFORMATION

- GE Medical Systems Information Technologies GmbH considers itself responsible for the effects on safety,reliability, and performance of the equipment, only if:
  - assembly operations, extensions, readjustments, modifications, or repairs are carried out by ergoline GmbH or by persons authorized by GE Medical Systems Information Technologies GmbH,
  - the electrical installation of the relevant room complies with the applicable national and local requirements,
  - and the instrument is used in accordance with the intended use and the instructions for use.

- This manual contains service information; operating instructions are provided in the operator's manual of the instrument.

- This manual is in conformity with the instrument at printing date.

- The Service Manual **eBike II** is valid for the following devices:

2017911-201	EBIKE BASIC
2017911-202	EBIKE BASIC US
2017911-203	EBIKE BASIC & BP
2017911-204	EBIKE BASIC & BP US
2017911-205	EBIKE COMFORT
2017911-206	EBIKE COMFORT US
2017911-207	EBIKE COMFORT & BP
2017911-208	EBIKE COMFORT & BP US
2017911-209	EBIKE L 240V
2017911-210	EBIKE L & BP 240V
2017911-211	EBIKE L EXT TRMNL 240V
2017911-212	EBIKE L & BP EXT TRMNL 240V
2017911-213	EBIKE L 120V US
2017911-214	EBIKE L & BP 120V US
2017911-215	EBIKE L EXT TRMNL 120V US
2017911-216	EBIKE L & BP EXT TRMNL 120V US
2017911-217	EBIKE EL 240V
2017911-218	EBIKE EL & BP 240V
2017911-219	EBIKE EL EXT TRMNL 240V
2017911-220	EBIKE EL & BP EXT TRMNL 240V
2017911-221	EBIKE EL 120V US
2017911-222	EBIKE EL & BP 120V US
2017911-223	EBIKE EL EXT TRMNL 120V US
2017911-224	EBIKE EL & BP EXT TRMNL 120V US

optional with Module „N I B P" and all Supply and Service Items
and Software Version FW 3.0

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REVISION HISTORY

This manual is subject to the GE Medical Systems Information Technologies change order service.
The revision code, a letter that follows the document part number, changes with every update of the manual.
The initial version of the manual has the letter A.

Part No.	Revision Code	Date	Comment
2018112-069	Rev A	2011-03	Initial Release
2018112-069	Rev B	2011-06	p. 11, 147: P/N lift tool changed p. 44: default values added p. 47: 60Hz explanation added p. 46, 47: saddle calibration, extended pp. 127: spare parts, accessories etc. in different chapters

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ELECTRICAL SAFETY

Warning

• Equipment Damage •

- *The regulations about handling ESD sensitive components must be observed.*

Hint

Requirements for Persons stipulated in the German Medical Device Operators Ordinance

- *The requirements of §11 section 6, §11 section 5 sentence 1 and §6 section 4 of the MPBetreibV (German Medical Device Operator Ordinance) must be satisfied.*

Warning

• Patient Hazard, Equipment Damage •

- *IEC 60601-1 requirements must be satisfied during repair, modifications and inspections of medical electrical equipment.*

- *To ensure that equipment functions faultlessly and without presenting any hazard after service interventions, it must be subjected to the test procedures stipulated for the different device categories.*

- *A device is considered to be unsafe, when:*
  - *it cannot be repaired*
  - *the user does not wish to have the device repaired. In this case, the operator must be informed in writing of the hazard presented by the device. The same remark must be annotated on the service report and on the service invoice..*

• Patient Hazard, Equipment Damage •

- *Use original spareparts only.*
- *For information about product changes, refer to the manufacturer's original documentation only.*
- *Observe the fuses' original ratings, characteristics and Ampere interrupting capacity.*
- *Parts of the device that ensure its safe operation must be neither damaged nor obviously unsuitable. This applies to insulation and insulating components in particular.*
- *Power cords must be visually inspected for signs of damage before connecting them to the power line.*

Leakage currents

Measuring equipment

The measuring equipment used for the electrical safety tests must be inspected and calibrated at regular intervals. As per the German Medical Device Operator Ordinance, the measurement results must be documented in the medical device book.

eBike II basic / comfort

The eBike II basic/comfort ergometers are protection class II equipment (no connection to protective ground). The necessary electrical safety tests for these devices together with the limit values are listed in the chapter **„eBike II basic/comfort – Preventive maintanance".**

eBike II L / EL

The eBike II L / EL supine ergometers are protection class I equipment (with connection to protective ground). The necessary electrical safety tests for these devices together with the limit values are listed in the chapter **„eBike II L – Preventive maintanance"** and **„eBike II EL – Preventive maintanance".**

Inspection according to German Medical Device Operator Ordinance

Technical Safety Inspections and Inspections of the Measuring Systems

According to §6 and §11 of the German Medical Device Operator Ordinance, the load unit must be inspected to the approved rules of the art at intervals of 2 years by an GE Medical Systems InformationTechnologies authorized service technician, and repaired if necessary.

Static and dynamic inspections of the ergometer must be performed according to DIN VDE 0750-238.

Calibration instructions for the NIBP module can be found in this Service manual. Follow these instructions to display the BP values with the test setup according to DIN EN 1060-1 and DIN EN1060-3.

The measurement results must be documented in the medical device book..

According to the German Medical Device Operator Ordinance, the next due inspection is indicated on the Test Sticker next to the ergometer's nameplate.

Hint

- §11 of the German Medical Device Operator Ordinance demands that ergometers used in medicine, i.e. ergometers for exercising patients with a defined and reproducible physical load, be calibrated with a dynamic load.

Tools

The following tools are recommended to disassemble the devices:

Flat bladed screwdrivers:

1 pc.	*1.0 x 0.18*
1 pc.	*4.0 x 0.8*
1 pc.	*6.0 x 1.2*

Fork wrenches:

1 pc.	*5.5 mm*
2 pc.	*7 mm*
1 pc.	*13 mm*
1 pc.	*17 mm*
1 pc.	*19 mm*

Socket wrenches:

1 pc.	*5.5 mm*
1 pc.	*13 mm*

Philips screwdrivers:

1 pc.	*PH 1*
1 pc.	*PH 2*
1 pc.	*PH 3*

Allan keys:

1 pc.	*2.5 mm*	*straight*
1 pc.	*3 mm*	*straight and elbow*
1 pc.	*4 mm*	*straight and elbow*
1 pc.	*5 mm*	*straight*
1 pc.	*6 mm*	*straight and elbow*

Pliers

1 pc.	*side cutter*
1 pc.	*flat nose pliers*
1 pc.	*multigrip pliers*

Special tools

1 pc.	*crank extractor (P/N 2005737-001)*
2 pc.	*round pin, max. 3 mm, minimum length 15 mm*
1 pc.	*ergometer eBike lift-up service tool (P/N 2018111-143)*
1 pc.	*calibrated NIBP measure instrument*

Electronic modules / Assembly

Overview

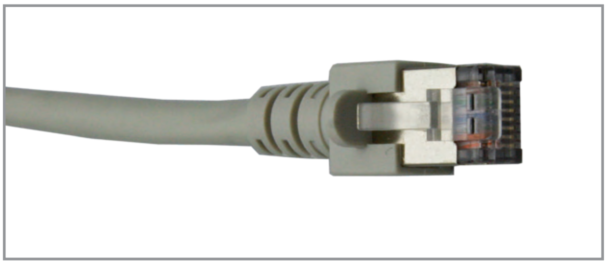
Description of electronic and cabling

The electronic of the eBike II is based on a modular concept.
Each module has its own processor with the appropriate software.

To communicate between different modules, the CAN bus is used - a stable and standardized protocol used in the automotive industrie.

The connection between different modules is made by use of standard shielded patch cables.

These cables carry the power lines (24 volt) and the CAN bus signal lines.



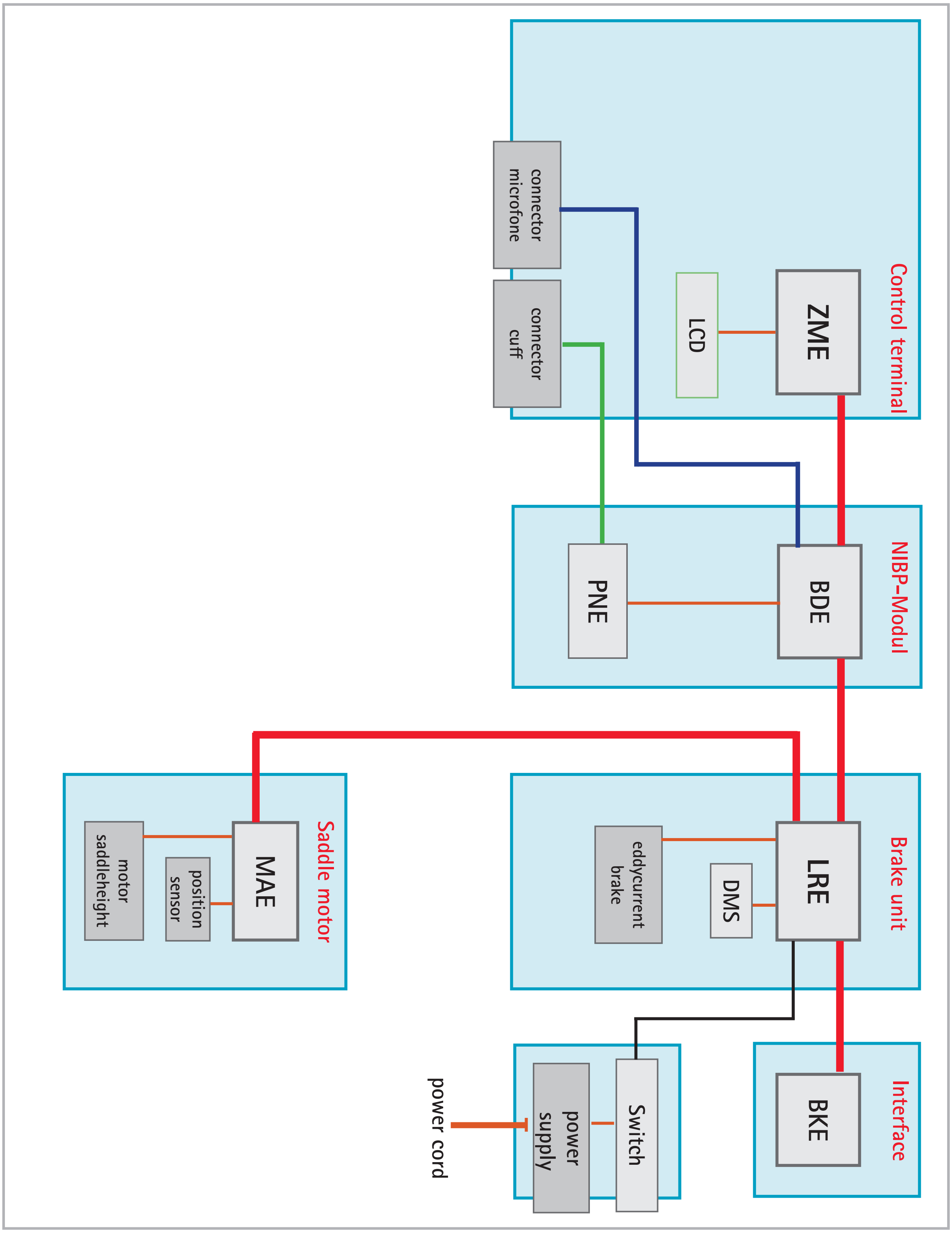
Standard connecting cablel (patch cable, shielded)

ABBREVIATIONS

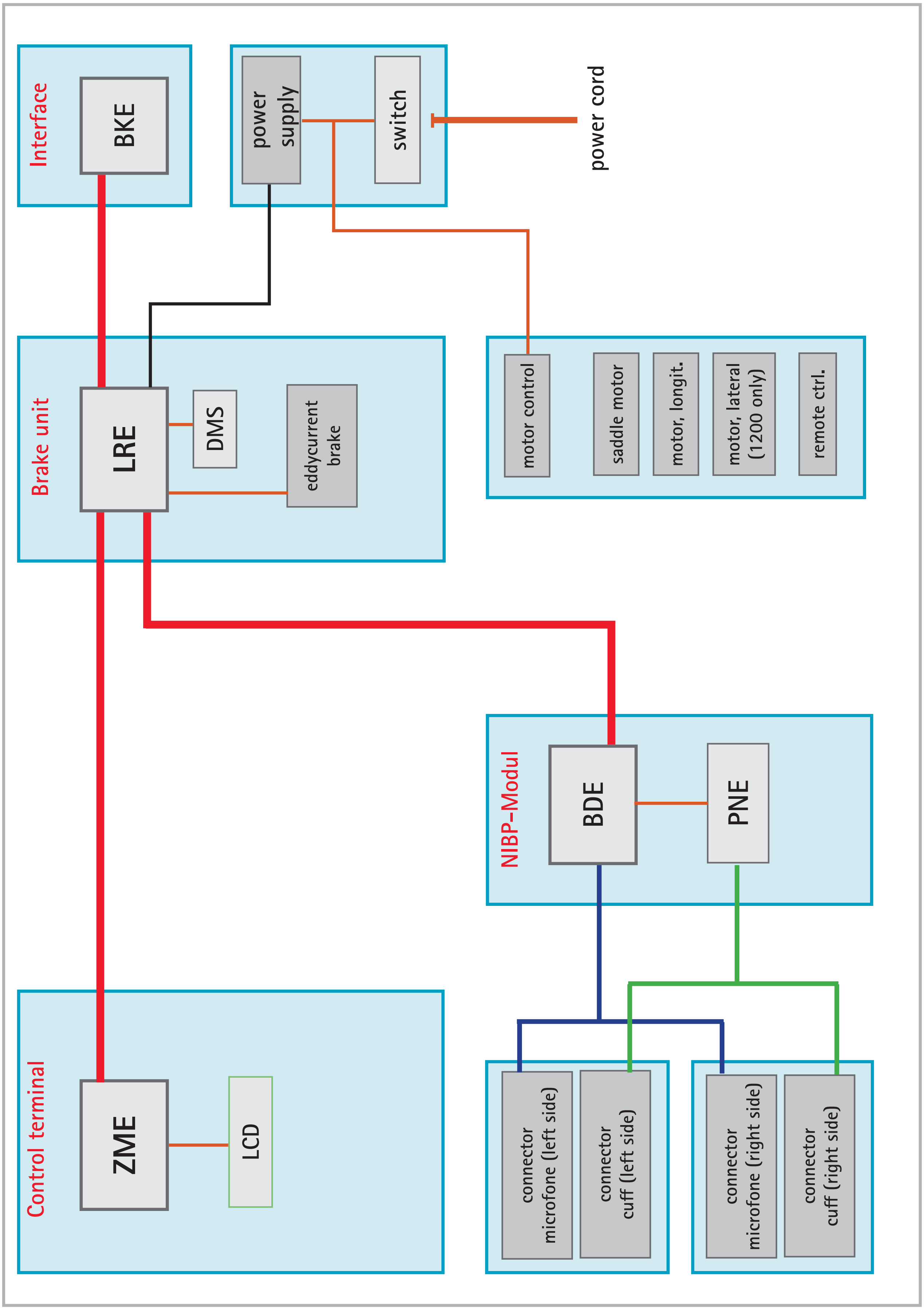
ZME	Main control unit
LRE	Load regulation unit
BKE	**B**asic communication unit
BDE	Bloodpressure unit
PNE	Pneumatic unit (NIBP)
MAE	Saddle motor unit
DMS	Strain gauge
LCD	Display

🟥	RJ-45 Patchcable
🟦	Microfone cable
🟩	Connecting tube (cuff)

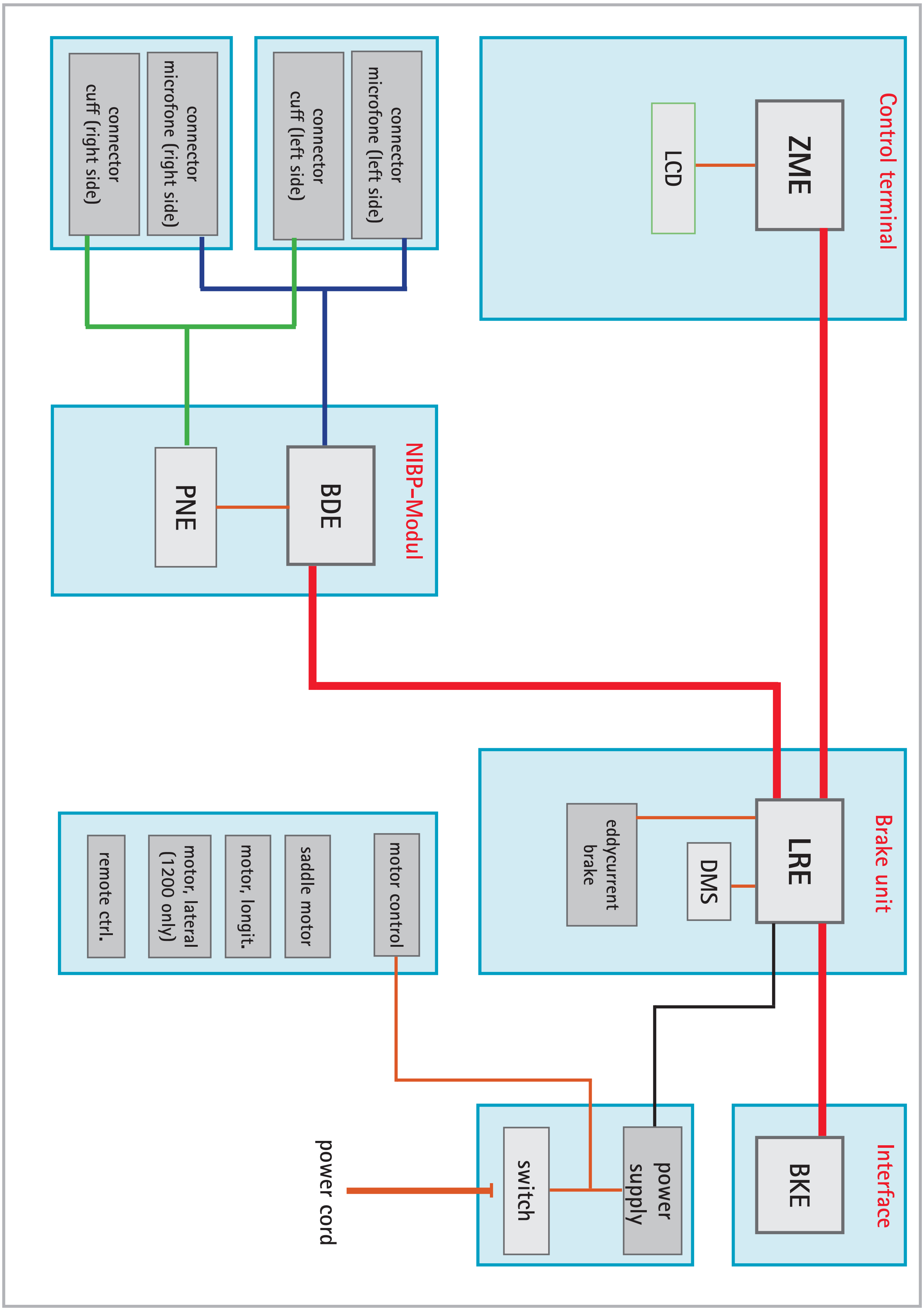
Block diagram bike ergometer eBike II basic/comfort electronics


Control terminal
ZME
LCD
connector microfone
connector cuff
NIBP-Modul
BDE
PNE
Brake unit
LRE
DMS
eddycurrent brake
Interface
BKE
Switch
power supply
power cord
Saddle motor
MAE
position sensor
motor saddleheight

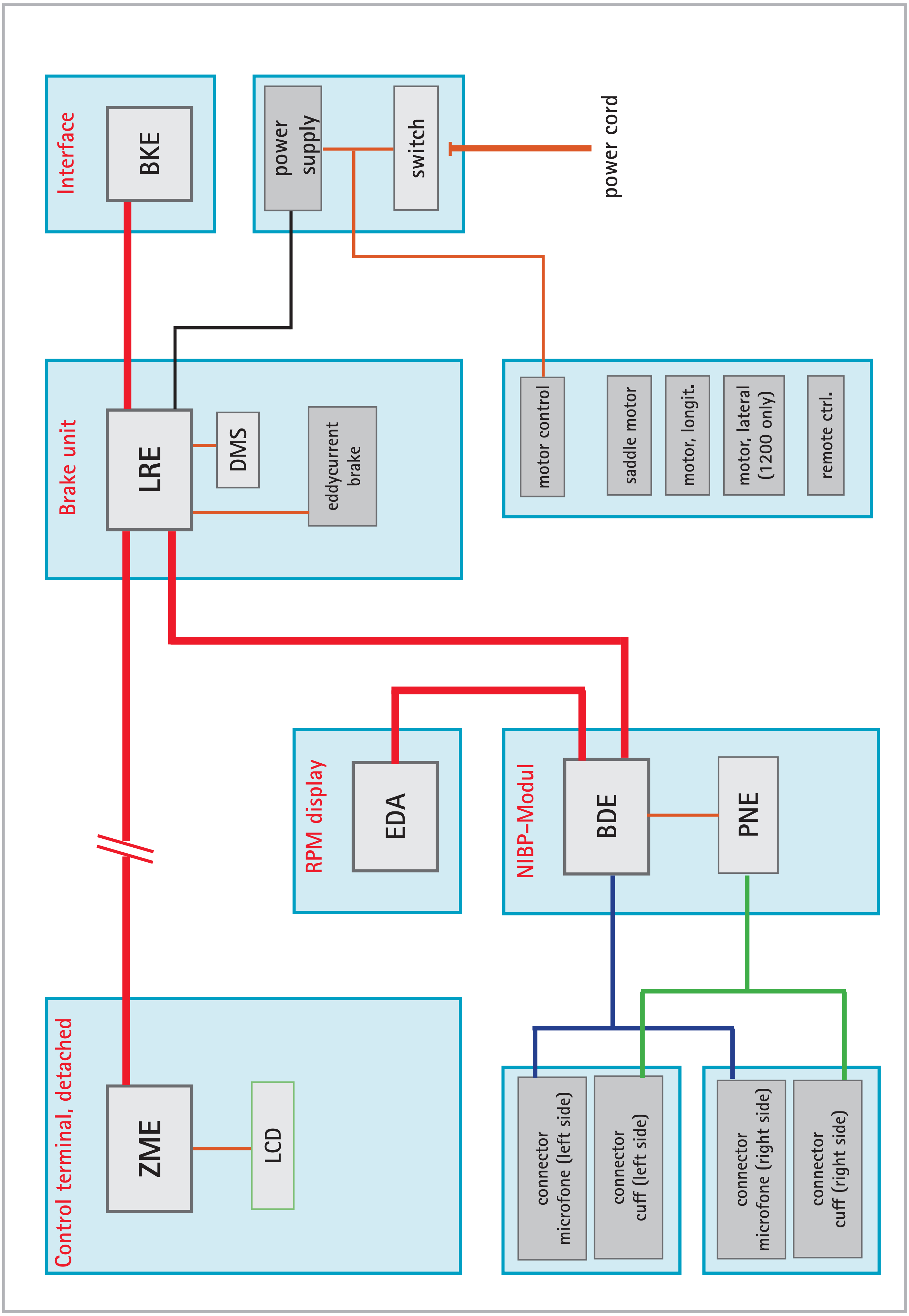
BLOCK DIAGRAM SUPINE ERGOMETER EBIKE II L ELECTRONICS


Interface
BKE
power supply
switch
power cord
Brake unit
LRE
DMS
eddycurrent brake
motor control
saddle motor
motor, longit.
motor, lateral (1200 only)
remote ctrl.
NIBP-Modul
BDE
PNE
Control terminal
ZME
LCD
connector microfone (left side)
connector cuff (left side)
connector microfone (right side)
connector cuff (right side)

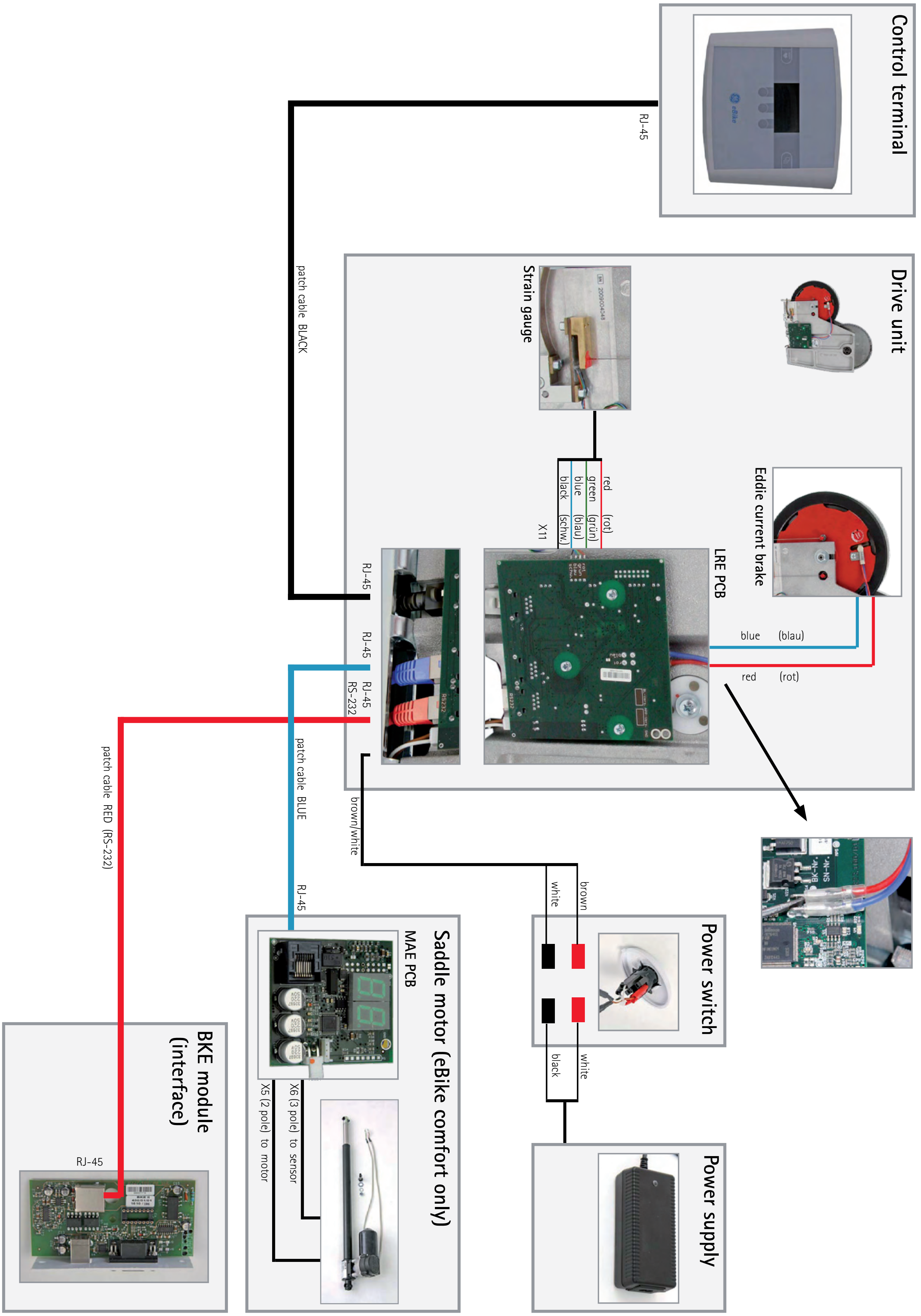
Block diagram supine ergometer eBike II EL electronics


Control terminal
ZME
LCD
connector
microfone (left side)
connector
cuff (left side)
connector
microfone (right side)
connector
cuff (right side)
NIBP-Modul
BDE
PNE
Brake unit
LRE
DMS
eddycurrent
brake
motor control
saddle motor
motor, longit.
motor, lateral
(1200 only)
remote ctrl.
Interface
BKE
power
supply
switch
power cord

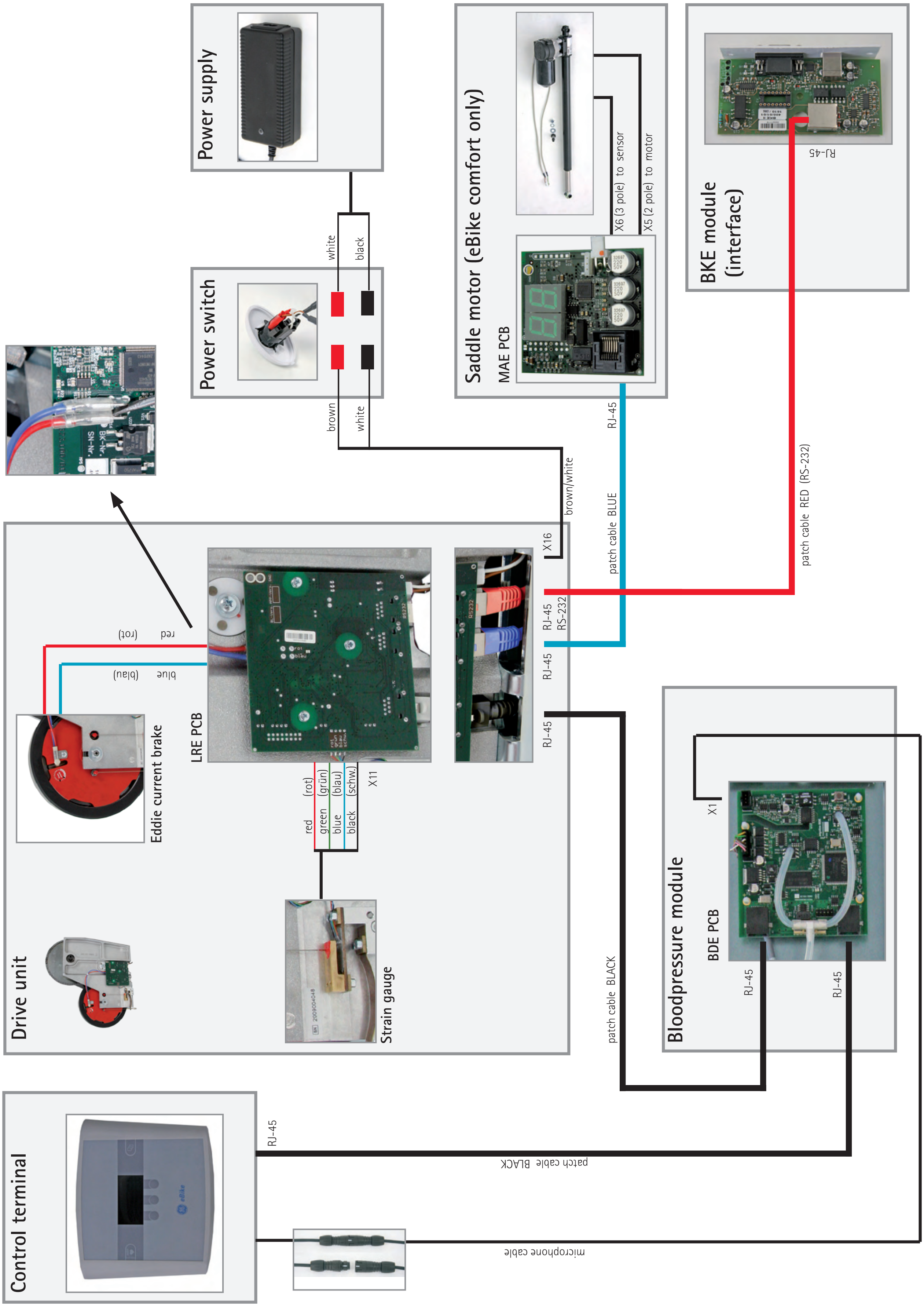
Block diagram supine ergometer eBike II EL electronics control terminal detached


Interface
BKE
power supply
switch
power cord
Brake unit
LRE
DMS
eddycurrent brake
motor control
saddle motor
motor, longit.
motor, lateral (1200 only)
remote ctrl.
RPM display
EDA
NIBP-Modul
BDE
PNE
Control terminal, detached
ZME
LCD
connector microfone (left side)
connector cuff (left side)
connector microfone (right side)
connector cuff (right side)

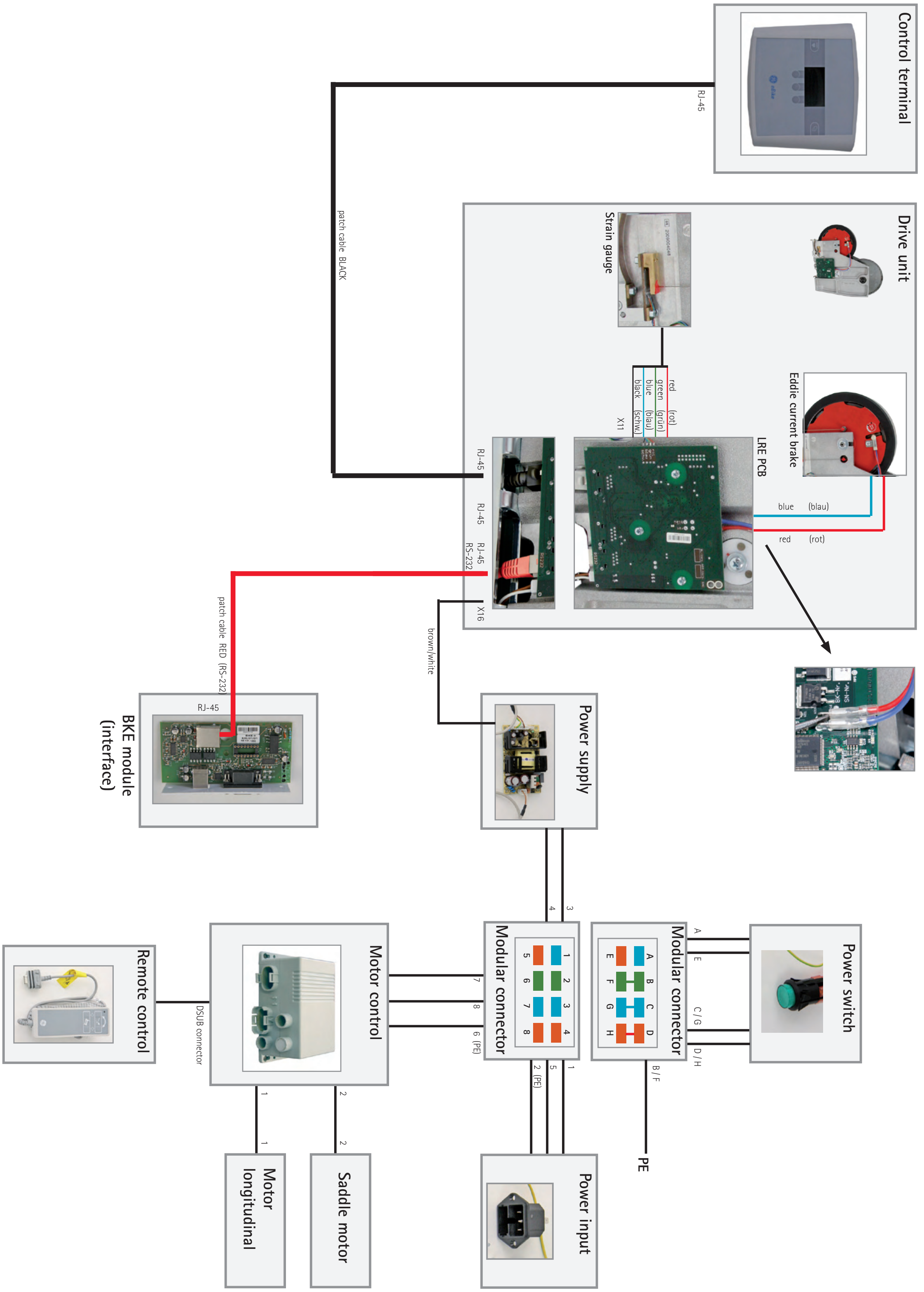
Wirong diagram eBike II basic / comfort


Control terminal
RJ-45
patch cable BLACK
Drive unit
Strain gauge
Eddie current brake
LRE PCB
red (rot)
green (grün)
blue (blau)
black (schw.)
X11
blue (blau)
red (rot)
RJ-45
RJ-45
RJ-45
RS-232
patch cable BLUE
brown/white
patch cable RED (RS-232)
RJ-45
Power switch
brown
white
white
black
Power supply
Saddle motor (eBike comfort only)
MAE PCB
X6 (3 pole) to sensor
X5 (2 pole) to motor
BKE module (interface)
RJ-45

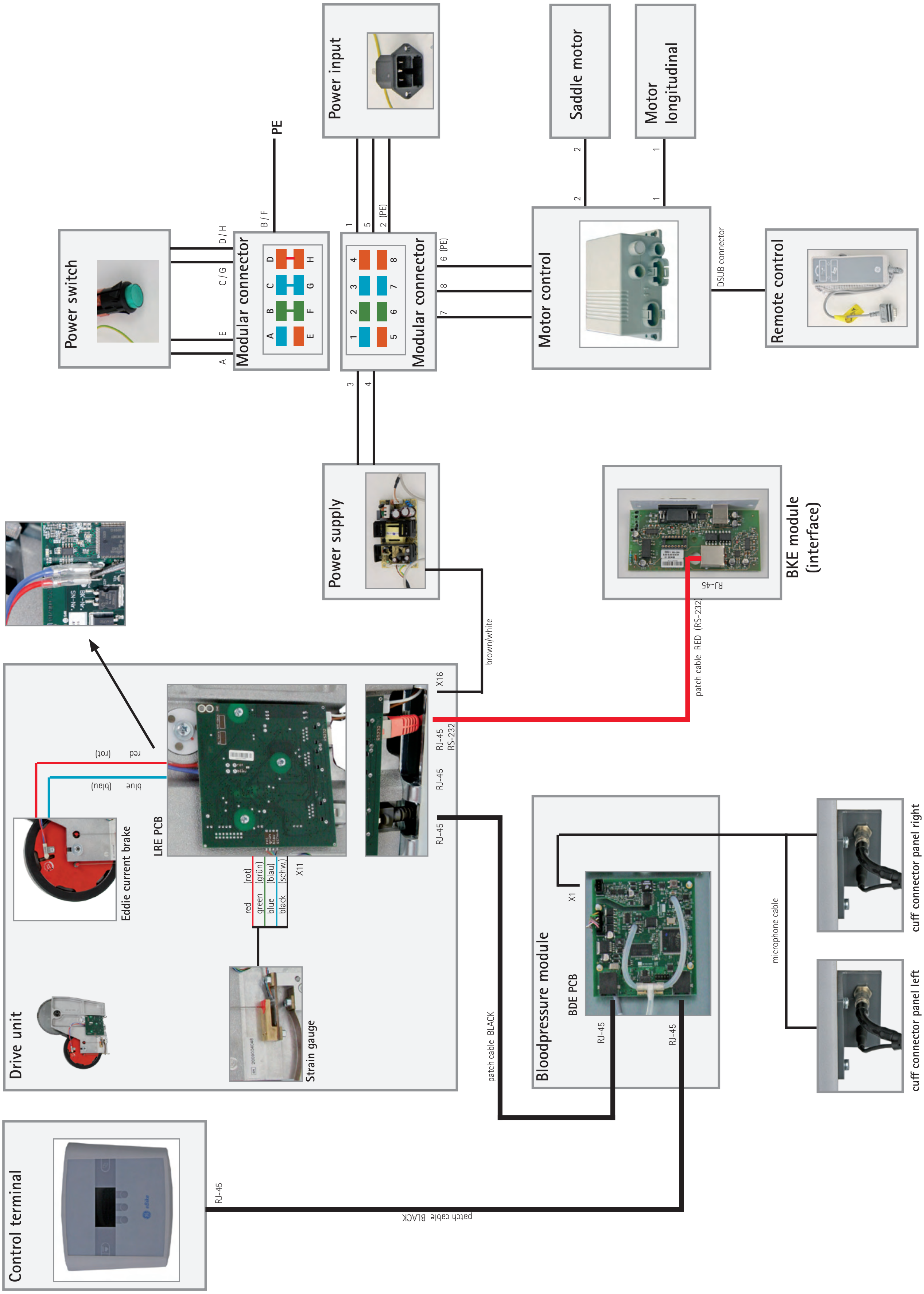
Wirong diagram eBike II basic / comfort with NIBP


Power supply
Power switch
white
black
brown
white
Saddle motor (eBike comfort only)
MAE PCB
X6 (3 pole) to sensor
X5 (2 pole) to motor
RJ-45
BKE module (interface)
RJ-45
patch cable BLUE
patch cable RED (RS-232)
brown/white
X16
RJ-45 RS-232
RJ-45
RJ-45
Drive unit
LRE PCB
Eddie current brake
red (rot)
blue (blau)
red (rot)
green (grün)
blue (blau)
black (schw.)
X11
Strain gauge
patch cable BLACK
Bloodpressure module
BDE PCB
X1
RJ-45
RJ-45
Control terminal
RJ-45
patch cable BLACK
microphone cable

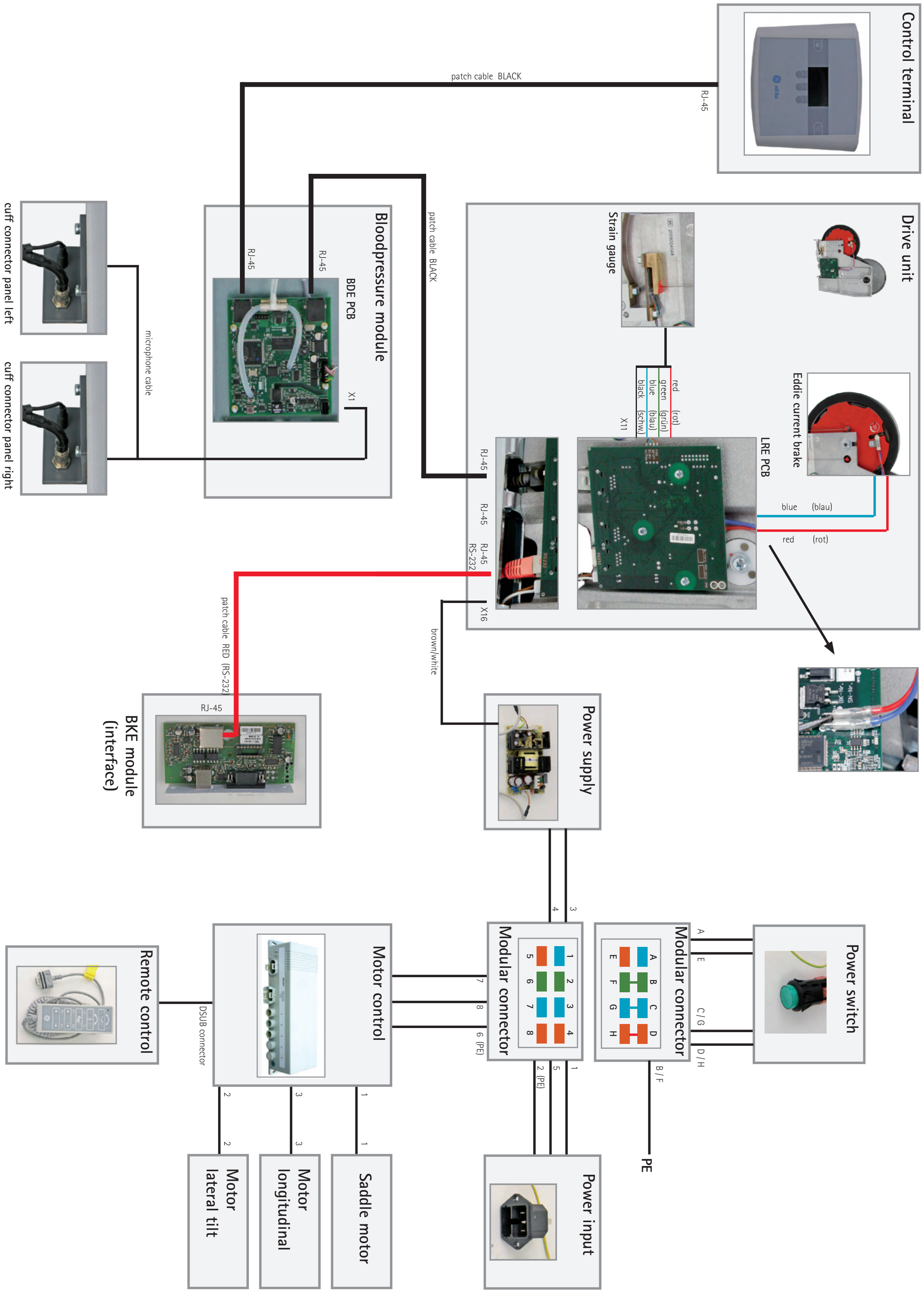
Wirong diagram eBike II L


Control terminal
RJ-45
patch cable BLACK
Drive unit
Strain gauge
red (rot)
green (grün)
blue (blau)
black (schw.)
X11
LRE PCB
Eddie current brake
blue (blau)
red (rot)
RJ-45
RJ-45
RJ-45
RS-232
X16
brown/white
patch cable RED (RS-232)
RJ-45
BKE module (interface)
Power supply
4
3
Modular connector
1 2 3 4
5 6 7 8
Modular connector
A B C D
E F G H
A
E
C / G
D / H
B / F
PE
Power switch
Motor control
7
8
6 (PE)
1
5
2 (PE)
DSUB connector
Remote control
1
1
2
2
Motor longitudinal
Saddle motor
Power input

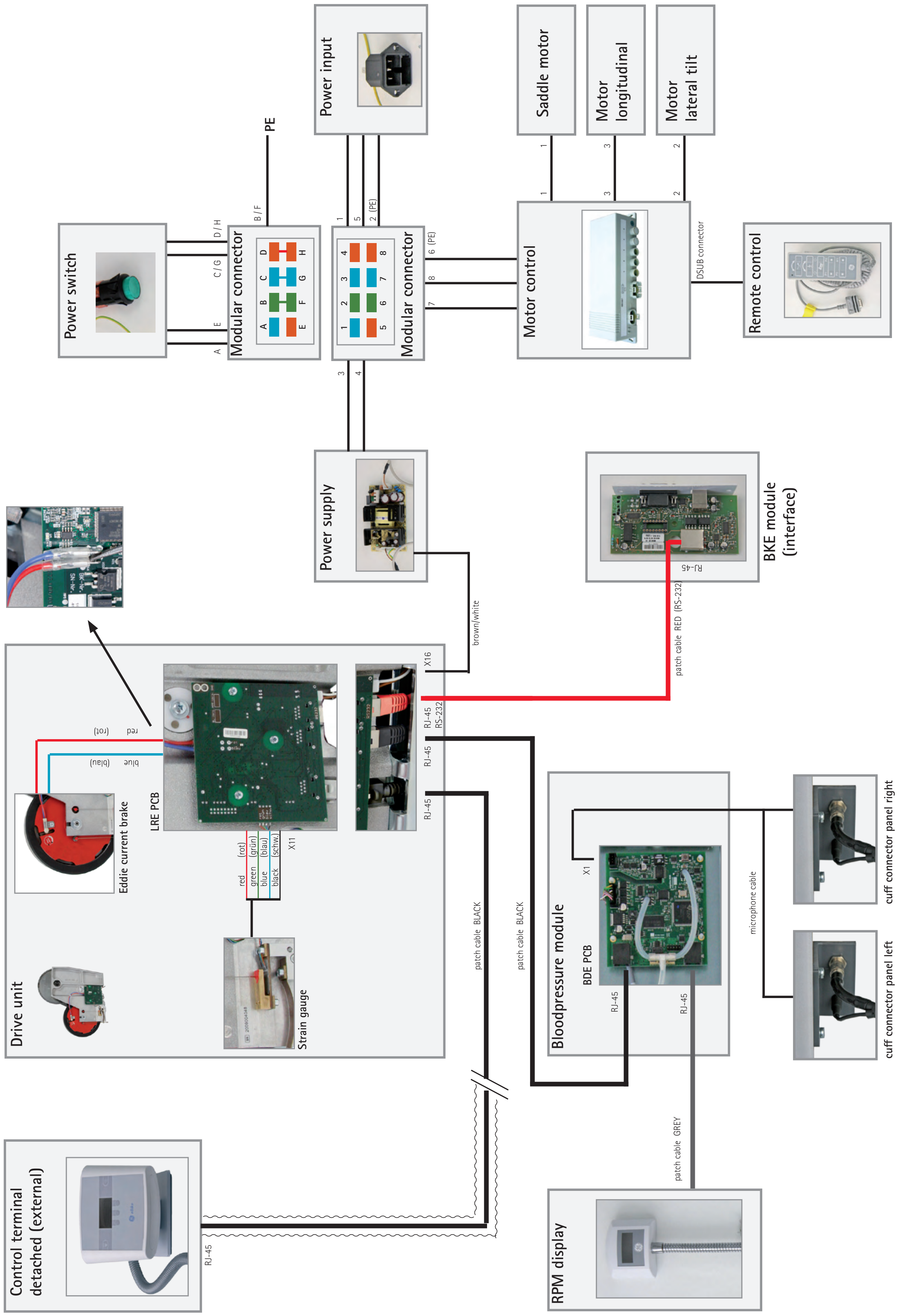
Wirong diagram eBike II L with NIBP


Power switch
A
E
C / G
D / H
Modular connector
A
B
C
D
E
F
G
H
B / F
PE
Power input
1
5
2 (PE)
Modular connector
1
2
3
4
5
6
7
8
6 (PE)
8
7
3
4
Saddle motor
2
2
Motor longitudinal
1
1
Motor control
DSUB connector
Remote control
Power supply
brown/white
BKE module (interface)
RJ-45
patch cable RED (RS-232)
Drive unit
LRE PCB
X16
RJ-45 RS-232
RJ-45
RJ-45
red (rot)
blue (blau)
Eddie current brake
red (rot)
green (grün)
blue (blau)
black (schw.)
X11
Strain gauge
patch cable BLACK
Bloodpressure module
BDE PCB
X1
RJ-45
RJ-45
microphone cable
cuff connector panel right
cuff connector panel left
Control terminal
RJ-45
patch cable BLACK

Wirong diagram eBike II EL with NIBP


Control terminal
RJ-45
patch cable BLACK
Drive unit
Strain gauge
Eddie current brake
LRE PCB
X11
red (rot)
green (grün)
blue (blau)
black (schw.)
blue (blau)
red (rot)
RJ-45
RJ-45
RJ-45 RS-232
X16
patch cable BLACK
Bloodpressure module
BDE PCB
RJ-45
RJ-45
X1
microphone cable
cuff connector panel left
cuff connector panel right
patch cable RED (RS-232)
RJ-45
BKE module (interface)
brown/white
Power supply
4
3
Modular connector
1 2 3 4
5 6 7 8
7
8
6 (PE)
2 (PE)
5
1
Modular connector
A B C D
E F G H
A
E
C / G
D / H
B / F
PE
Power switch
Power input
Motor control
DSUB connector
Remote control
2
3
1
2
3
1
Motor lateral tilt
Motor longitudinal
Saddle motor

Wirong diagram eBike II EL control terminal detached with NIBP



Power switch
A
C / G
D / H
E
B / F
PE
Modular connector
A
B
C
D
E
F
G
H
Power input
1
5
2 (PE)
Modular connector
1
2
3
4
5
6
7
8
6 (PE)
8
7
3
4
Saddle motor
Motor longitudinal
Motor lateral tilt
1
3
2
Motor control
DSUB connector
Remote control
Power supply
brown/white
BKE module (interface)
RJ-45
patch cable RED (RS-232)
Drive unit
Eddie current brake
red (rot)
blue (blau)
LRE PCB
X11
red (rot)
green (grün)
blue (blau)
black (schw.)
Strain gauge
X16
RJ-45 RS-232
RJ-45
RJ-45
patch cable BLACK
patch cable BLACK
Bloodpressure module
BDE PCB
X1
RJ-45
RJ-45
microphone cable
cuff connector panel right
cuff connector panel left
patch cable GREY
RPM display
Control terminal detached (external)
RJ-45

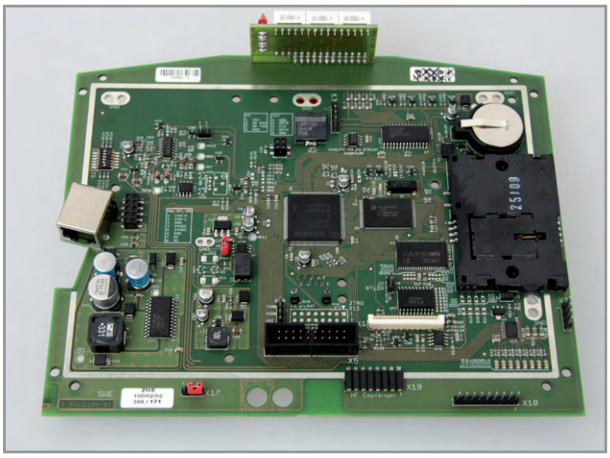
CONTROL TERMINAL

ZME - MAIN ELECTRONIC BOARD

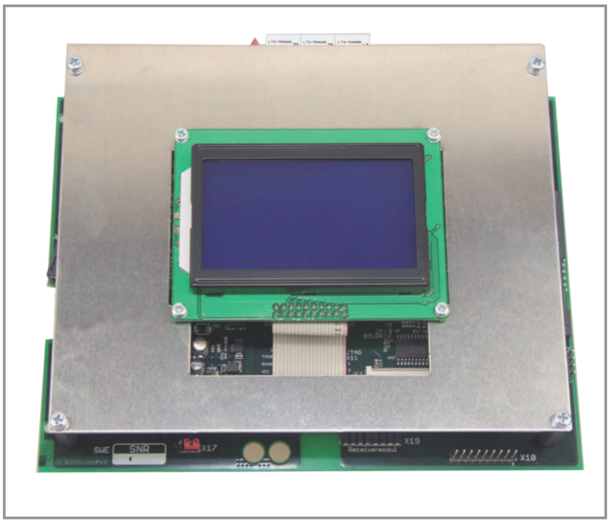
The ZME board represents the „mainboard" of the eBike II electronics.
The LC display and the foil keyboard are connected to this board.

Remove the flat cable of the display and loose the 4 screws fixing the bearing metal plate.

The display unit can be removed.



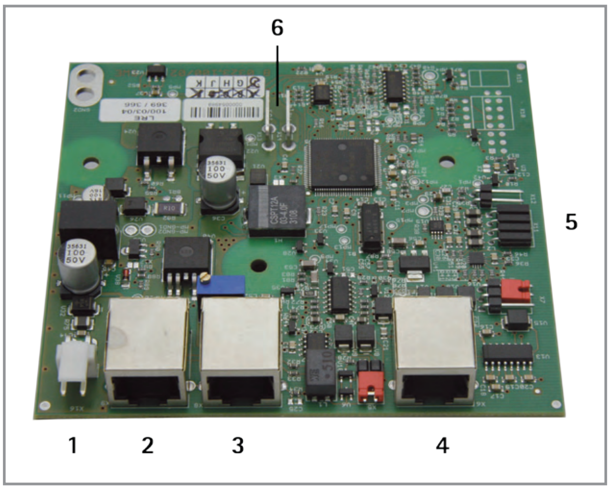
ZME BOARD (TOP VIEW)



ZME WITH DISPLAY MOUNTED

LOAD UNIT

LRE – LOAD REGULATING PCB



The elctronics of the LRE-PCB stabilizes the actual load of the eddy current brake with the given accuracy.
The rotations per minute are monitored with a non -contact hall sensor, the feedback signal of the strain gauge is analysed and the actual brake force adjusted accordingly.

The LRE board is mounted with the component side towards the aluminium housing of the drive unit.

The microprocessor of the LRE board also generates the interface signals for external communication (e.g. with PC ECG or ECG recorders).

The BKE interface board (generating the final RS-232 and USB signals) is always connected directly to the LRE board.

LRE BOARD

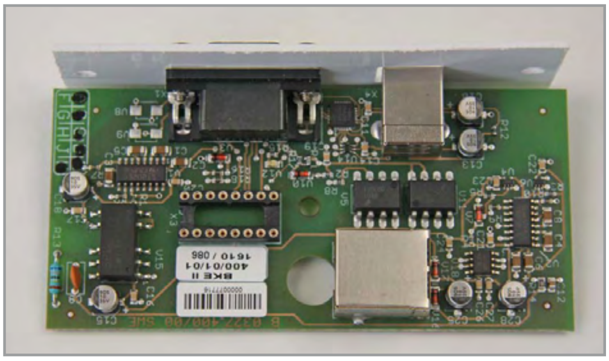
1	*Connector for power supply (cable from main switch)*
2	*Connector for BKE board (RS-232 marked)*
3	*RJ-45 connector for ergoline bus system*
4	*RJ-45 connector for ergoline bus system*
5	*Connector for strain gauge unit (DMS)*
6	*Connector for eddy current brake*

INTERFACE

BKE – INTERFACE PCB

The BKE board carries the external PC interfaces (RS-232 and USB).

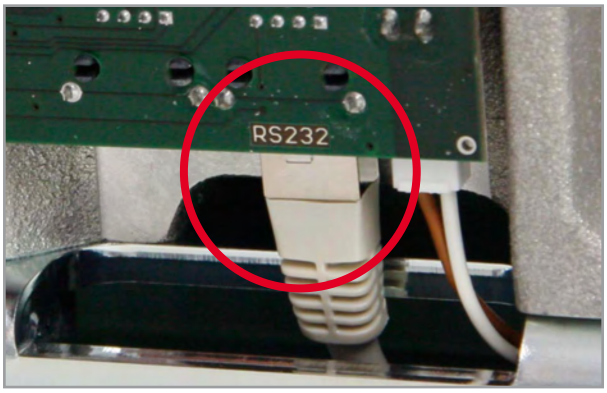
Both interfaces are electrically isolated (optocouplers).



BKE INTERFACE BOARD

The BKE is the only board without a microprocessor.

Therefore this board is always connected directly to the LRE board - the jack on LRE is labeled with „RS-232“.



RJ-45 CONNECTOR ON THGE LRE BOARD TO CONNECT WITH THE BKE INTERFACE BOARD

USB INTERFACE

DRIVER INSTALLATION (VIRTUAL COMX)

Administrator rights are required to install the driver.

- Start PC and Monitor.
- Finish all running programs (- in background running programs as well).
- Insert the USB driver CD (PN 2017911-130) into the CD-ROM drive.
- Depending on the Windows® operating system used, start the appropriate driver from the CD:

  Windows 2000®:
  CP210x_VCP_Win2K_XP_S2K3.exe

  Windows XP®, Windows Vista®, Windows 7®:
  CP210x_VCP_XP_S2K3_Vista_7.exe

- Follow the instructions given on the screen. Confirm the installation if a warning for a non indentified program is displayed.

- Click „Finish" to start the first part of the USB driver installation.

- Connect the eBike with the USB cable to the PC an switch the eBike on:
  eBike is automatically recognized by WINDOWS and the driver is loaded („Silicon Labs CP 210x").

- Follow instructions given on the screen.

- Remove the CD from the drive unit.

CHECK USB INTERFACE

The eBike has to be connected to the PC via USB cable and switched on.

- Start the WINDOWS „Device manager".

- Double click „COM & LPT" to display all connections.

- If an USB Serial Port („Silicon Labs CP 210x USB to UART Bridge") is assigned from COM1 up to COM4 no change is necessary.
  Keep the assigned COM port in mind - this port number has to be used in the CardioSoft settings.
  Close all open windows.

- If an USB Serial Port higher COM4 is assigned, one of the COM ports 1 to 4 has to be deactivated to use this port number for eBike.

CHANGE COM PORT ASSIGNMENT

- Right mouse click onto „Silicon Labs CP 210x USB to UART Bridge (COMx)"

- Select „Settings"

- Select Tab „Port Settings".

- Click onto „Advanced".

- Click onto „COM Port Number" and select an unused COM port between COM1 and COM4.

- Confirm with OK.

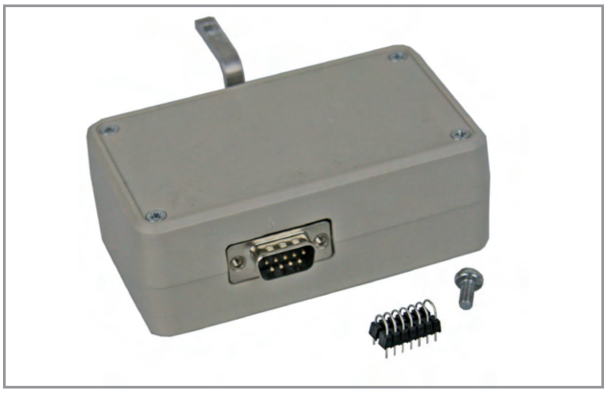
- Close all open windows.

COM – Interface extension (MAC 5000 ST/5500)

The MAC 5000 ST / MAC 5500 use analogue signals to set the load of the eBike, while the bloodpressure measurement is controlled with digital signals..

The eBike II is by default only equipped with a digital interface.

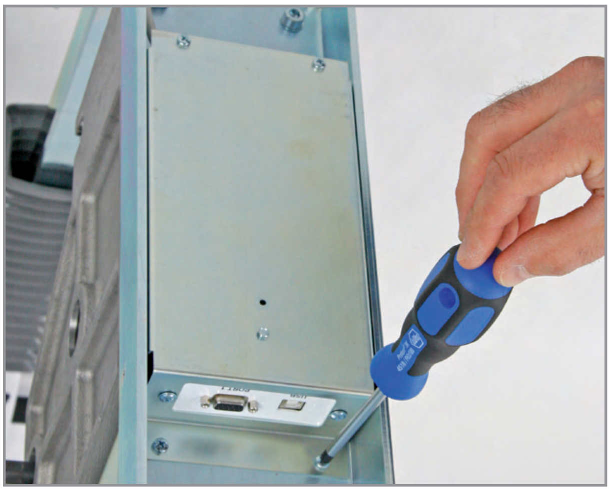
To connect an eBike II with a MAC 5000 ST / 5500 a special adapter (COM module PN 2008xxx-001) has to be installed to add an analogue interface to the eBike II.



COM module (PN 2008xxx) with jumper and screw

A jumper adapter has to be placed onto the BKE board to connect all required signals to the DSUB connector:

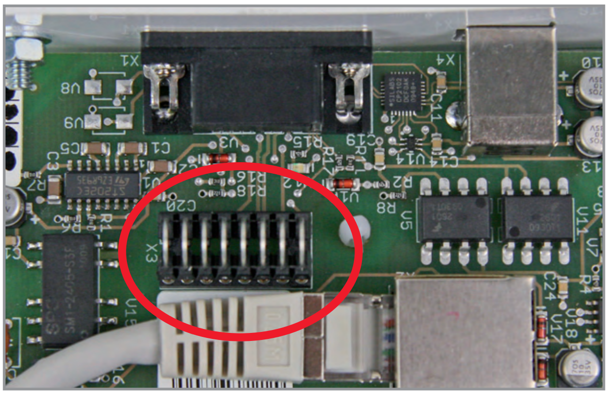
- Open the housing of the BKE on the bottom side of the ergometer.



Open the housing of the BKE (bootom side)

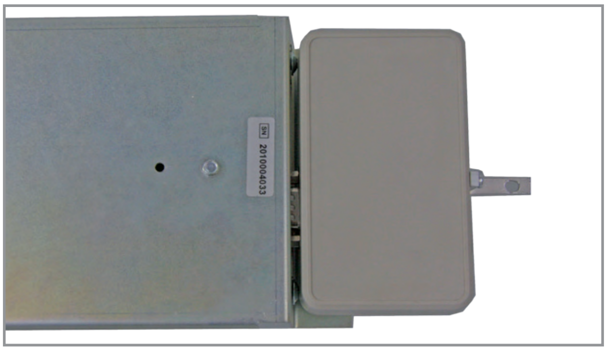
- Insert the jumper adapter into the corresponding socket, to close all necessary connections.

- Close the housing and fix to the ergometer chassis again.

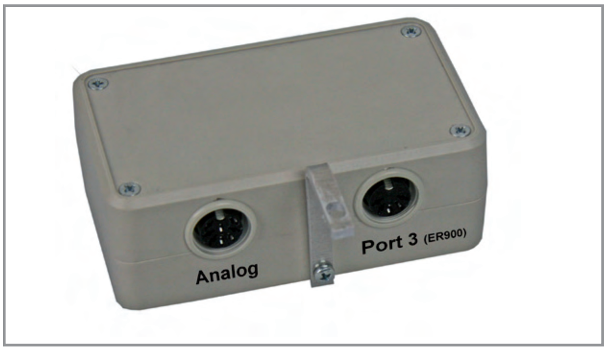


BKE-PCB with jumper adapter installed

The COM module is plugged onto the 9 pole DSUB connector (PORT 1) and screwed to the ergometer chassis.



COM module mounted on 9 pole DSUB



COM module connectors

The analog adapter has to be activated as follows:

- In Service Menu go to System Configuration and set Analog Interface to I.
- Then power OFF/ON the eBike.
- Go to Settings, select ECG Type, enter password 003 and select Analog / Digital

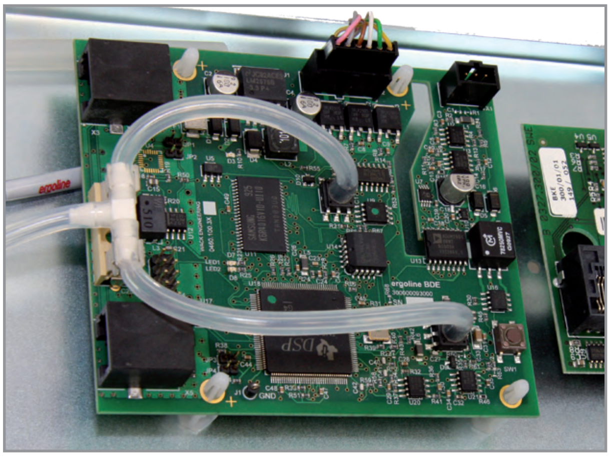
Insert the appropriate digital and analog connecting cables and fix the cables to the chassis using a strain relief..

NIBP BLOODPRESSURE UNIT

ASSEMBLY

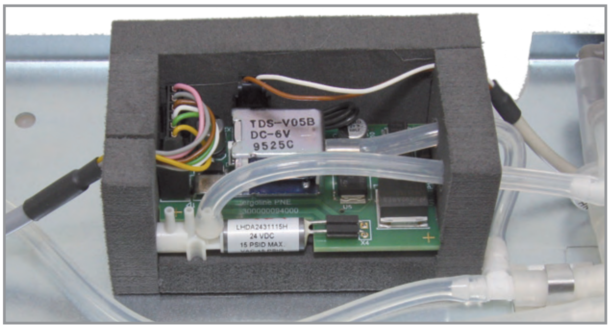
The NIBP module consists of several components.

The complete measurement electronics is placed on the BDE board.



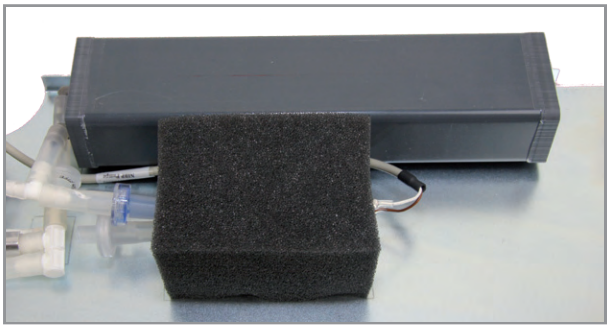
Bloodpressure measuring electronicse (BDE)

The valves and the power driver for the pump are placed on a separate board, located in an sound and vibration absorbing foam carrier.



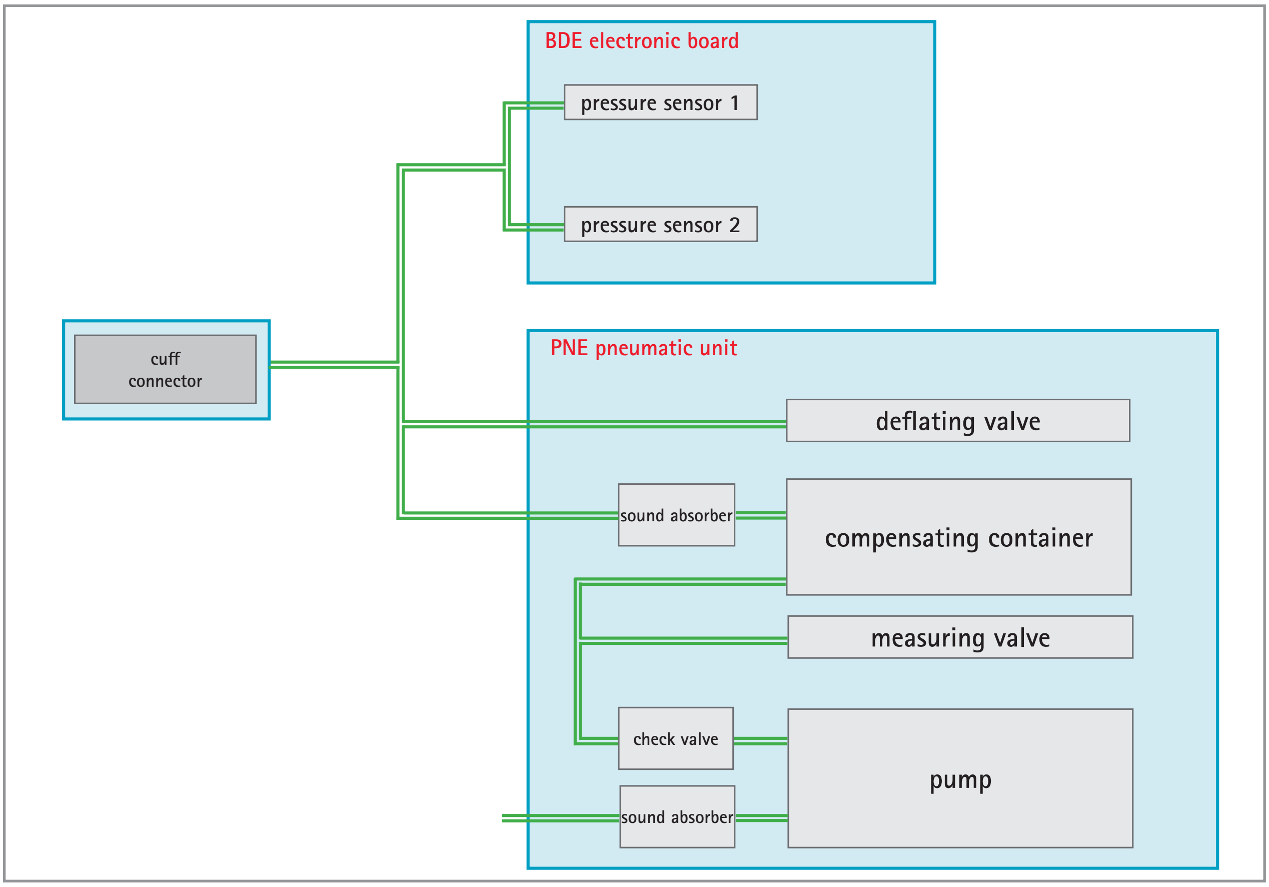
Valve and driver PCB

The pump is also placed in a separate sound absorbing foam carrier.

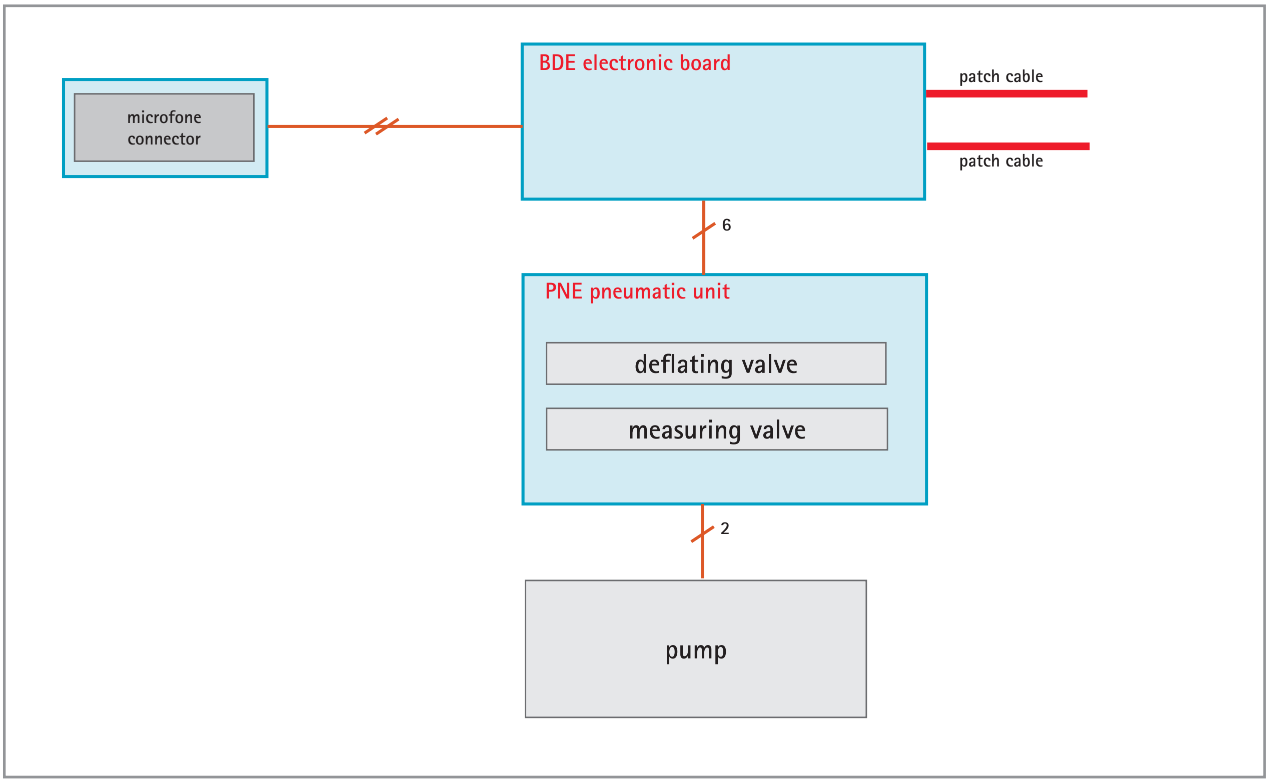


Pump and compensating container

PLACEMENT OF PRESSURE TUBES (SCHEMATIC)


BDE electronic board
pressure sensor 1
pressure sensor 2
cuff connector
PNE pneumatic unit
deflating valve
sound absorber
compensating container
measuring valve
check valve
pump
sound absorber

BLOCK DIAGRAM OF CABLING OF THE BLOODPRESSURE UNIT


microfone connector
BDE electronic board
patch cable
patch cable
6
PNE pneumatic unit
deflating valve
measuring valve
2
pump

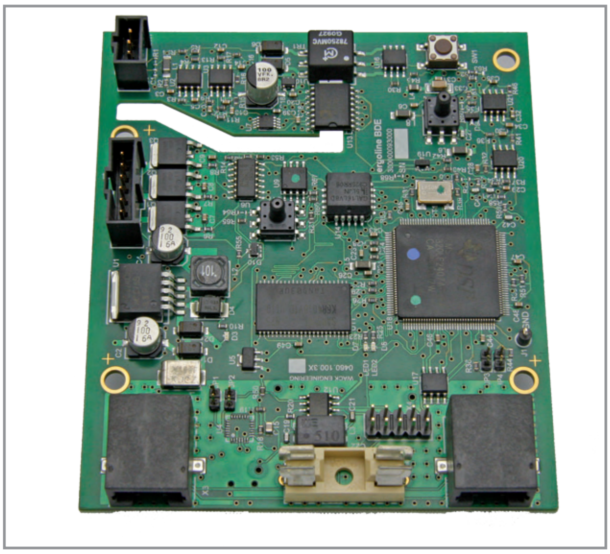
BDE – Bloodpressure PCB

The BDE electronics is responsible for analysing the microfone signals and controlling the valves and the pump.

The input of the microphone (upper left in picture) is galvanically separated.

A redundant surveillance system (2 nd pressure sensor) continously monitores the actual cuff pressure and the pump time.

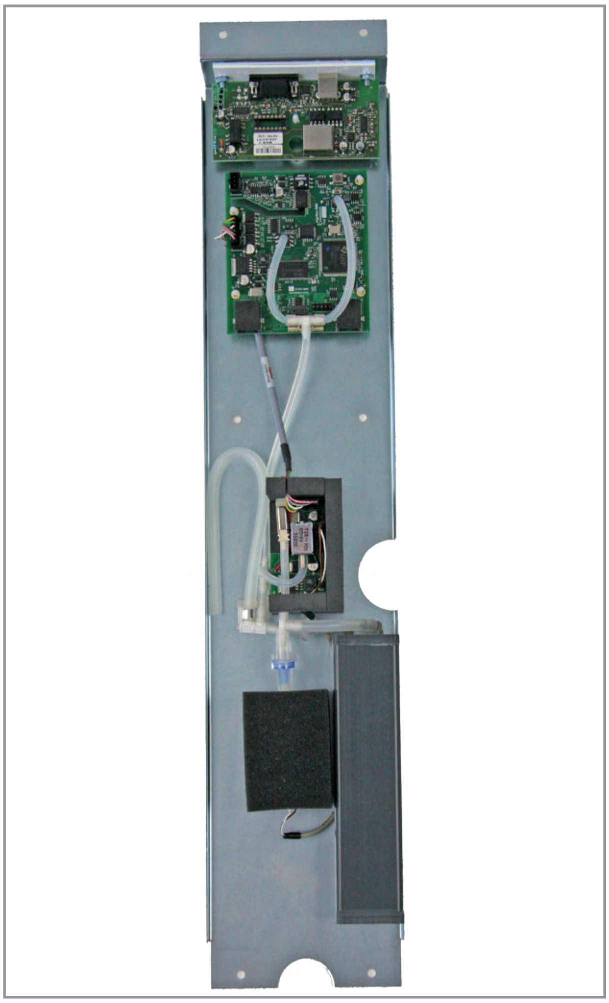
By use of the two RJ-45 jacks the BDE board is connected to the eBike II bus system.



BDE- Bloodpressure measurement board

PNE – Bloodpressure Pneumatic unit

Depending on the actual ergometer type, the pneumatic components (pump, valves, compensating container) are arranged on different positions.
Electronic cabling and connection of the pressure tubes is nevertheless identical.



Ergometer bloodpressure unit

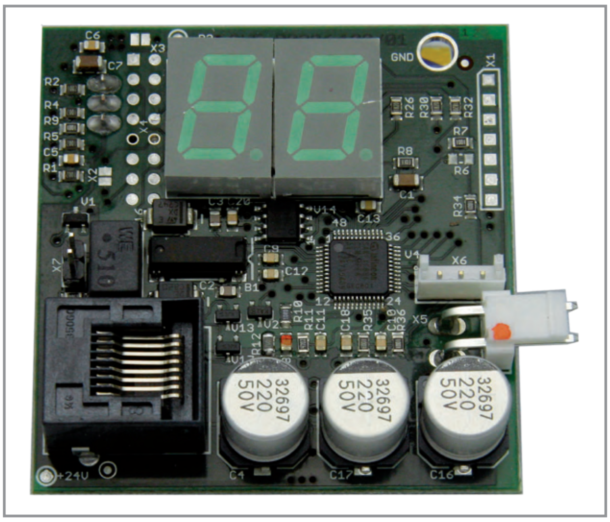
ADDITIONAL MODULES

MAE – SADDLEMOTOR / HEIGHT DISPLAY PCB

Controlling of saddle motor (eBike II comfort) and display of the actual saddle height is performed by the MAE board.

The MAE board has always to be placed at the end of the eBike II bus system (1 x RJ-45 jack only).

The saddle motor itself is connected with a special cable to the MAE board.



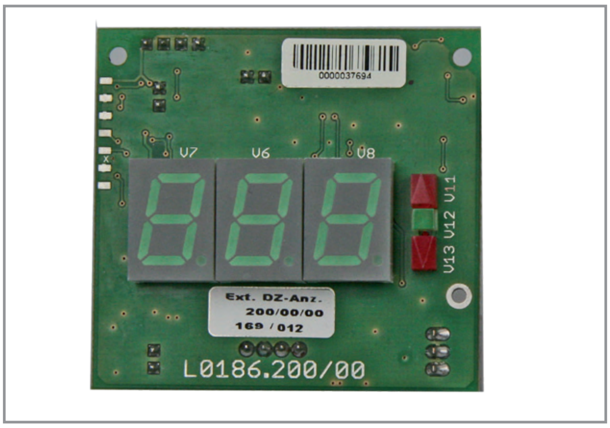
MAE BOARD (TOP VIEW)

DRE – EXTERNAL RPM DISPLAY PCB

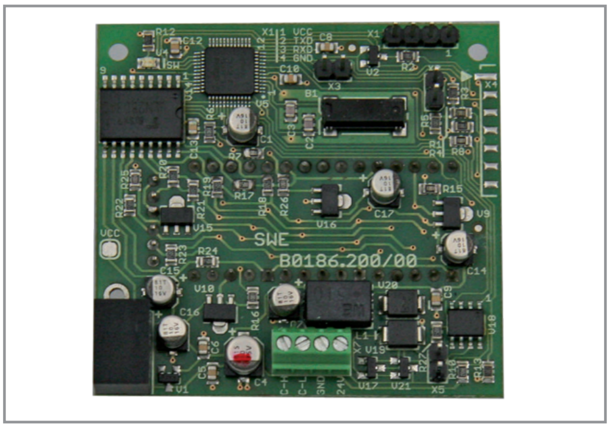
The eBike supine ergometers (eBike II 1000 and 1200) can be equipped with an external control terminal.
In this case a special rpm display for patient information is needed.
.

This electronic board has its own microprocessor and communicates via the eBike bus (CAT-5 patch cable).

The rpm display unit has to be connected as the last unit in the bus system (one RJ-45 connector only).



DRE – EXTERNAL RPM DISPLAY, FRONT SIDE (SUPIINE ERGOMETER)



DRE – EXTERNAL RPM DISPLAY, COMPONENT SIDE

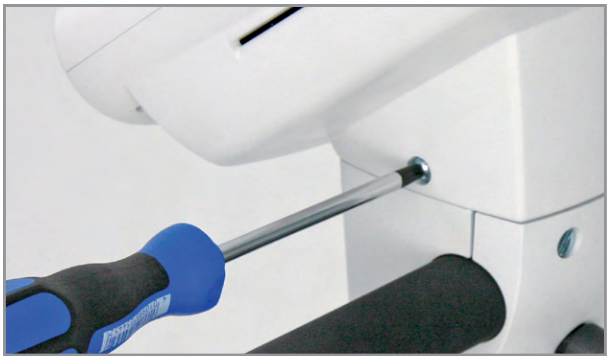
MECHANICAL ASSEMBLY

CONTROL TERMINAL

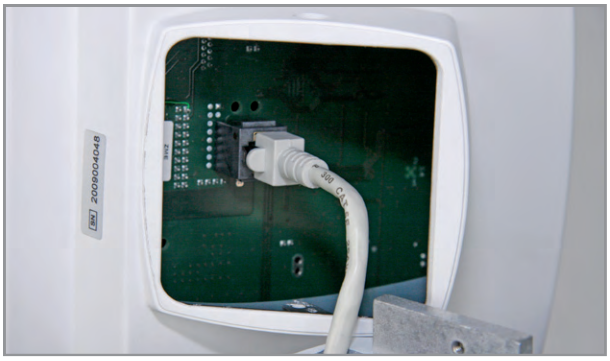
DISASSEMBLY OF CONTROL TERMINAL

Loose both Phillips-head screws at the side of the control terminal.

Remove the control terminal from the support.

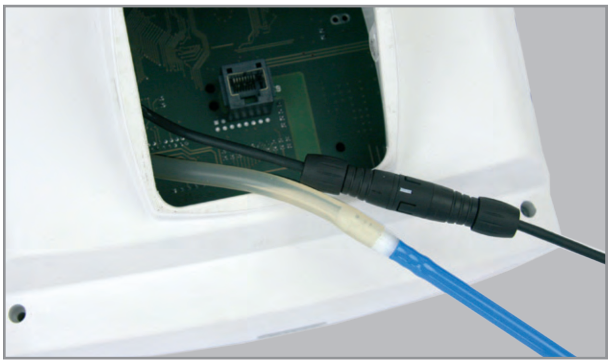


Disconnect the patch cable from the ZME board.



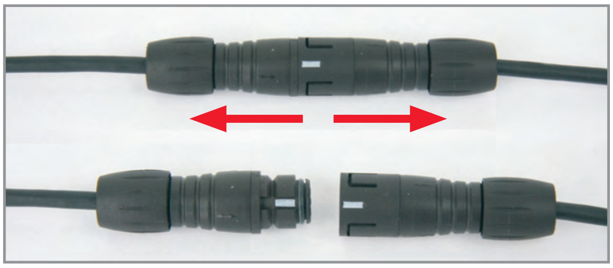
Ergometer with option bloodpressure:

- Disconnect the microfon cable by pulling out the 3 pole jack.(see picture)
- Disconnect the blue hose at the hose connector (see picture).



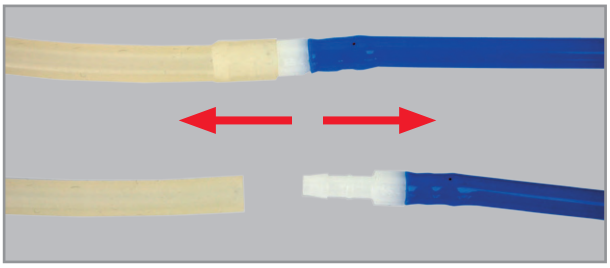
Caution

Do not twist the microphone cable connector - the cable will be damaged!



OPENING OF THE CONTROL TERMINAL

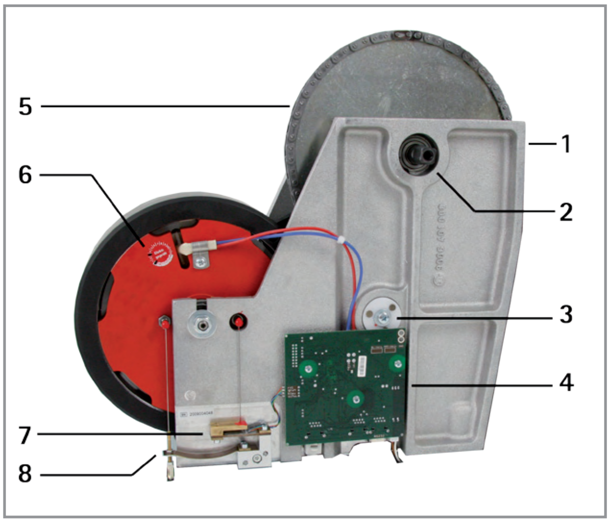
Loose the 4 Phillips head screws at the bottom of the housing.
Lift carefully the upper part of the housing (with the foil keyboard) and disconnect the cable from the ZME board.
The front panel is plugged into the enclosure and can be easily removed.



LOAD UNIT

ASSEMBLY

All eBike ergometers are equipped with an identical load unit (brake unit) with an eddy current brake of 1000 Watt.



ASSEMBLY OF THE LOAD UNIT

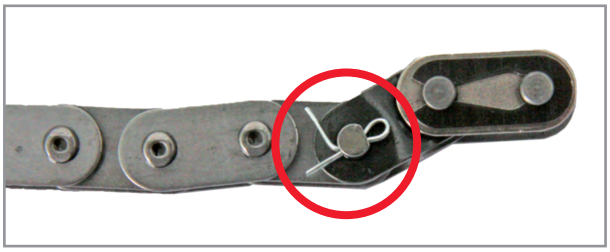
1	*Cast aluminium housing*
2	*Precision bearings*
3	*Rotational-speed sensor (magnetic)*
4	*LRE load regulation electronics*
5	*Sprocket with chain*
6	*Eddy current brake (1000 W)*
7	*Strain gauge unit (DMS)*
8	*Pretensioning spring*

TRANSMISSION CHAIN EXCHANGE

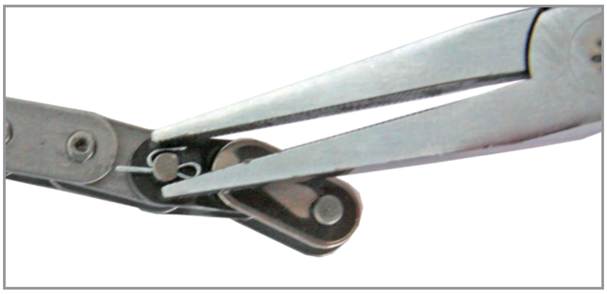
The new chain has to be prepared:

Hint

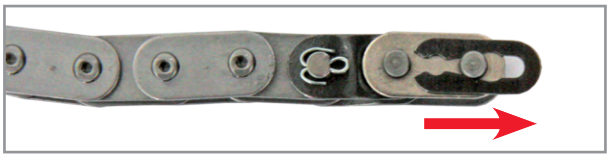
Exchange of the chain is possible without disassembling the complete housing - only the top of the housing has to be lifted.



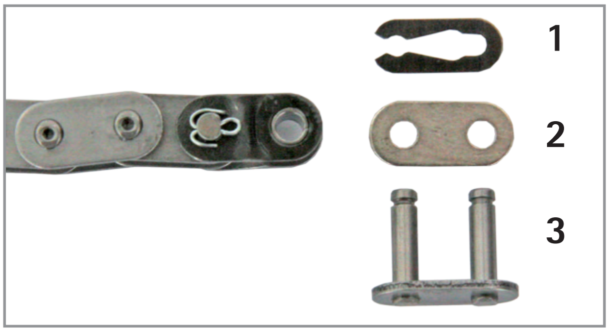
Bend both ends of the small fixation spring towards the axis by use of a flat nose plier.



Disassemble the chain lock by removing the retaining spring towards the end of the chain.

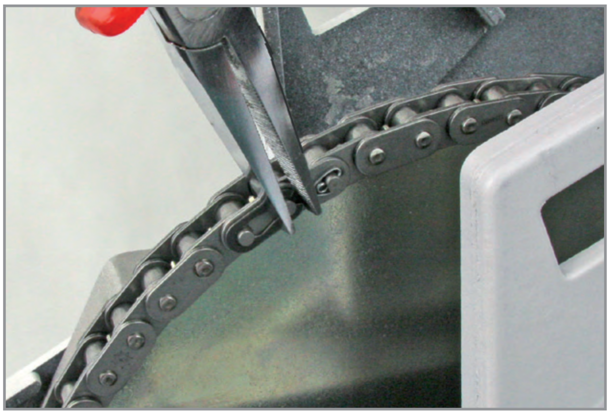


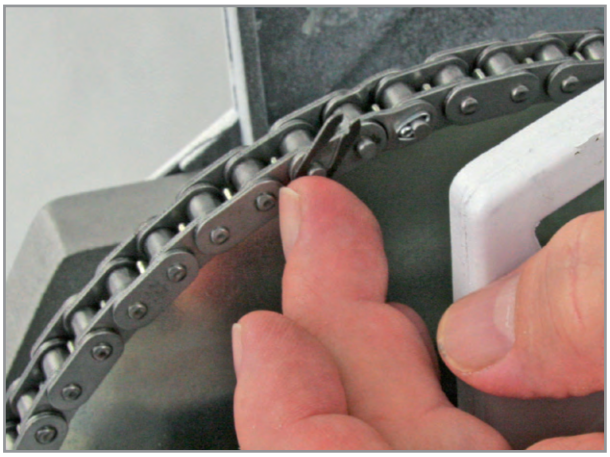
The chain lock consists of a retaining spring (1), an outer plate (2) and an outer plate with pins (3).



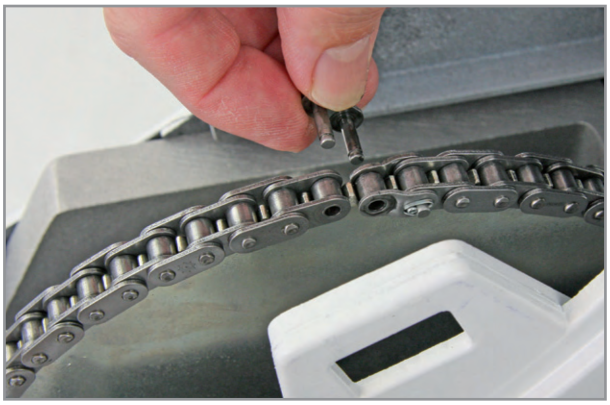
Turn the sprocket to move the chain coupling to the top position.

Remove carefully the fixation clamp of the chain with a pliers.

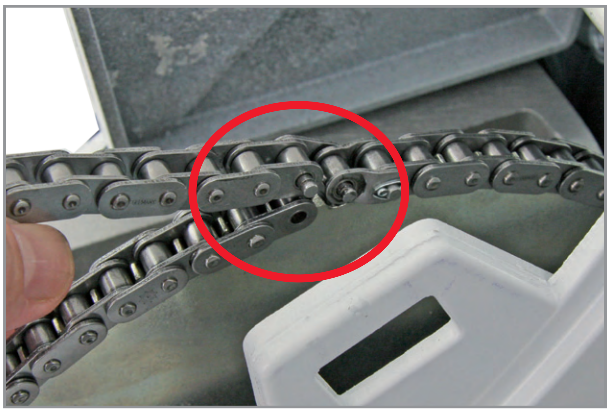




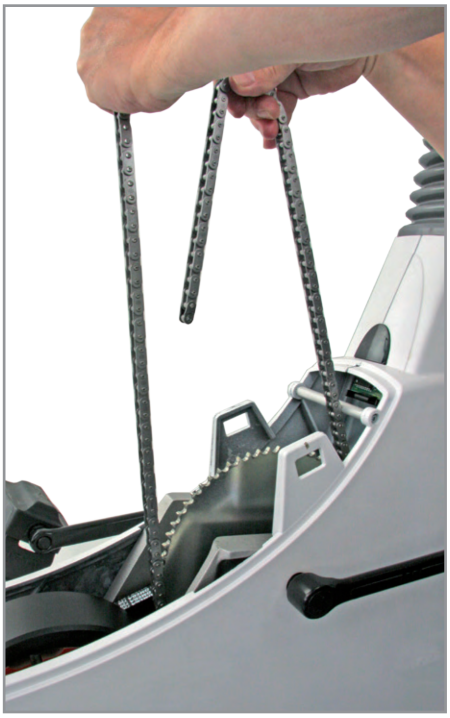
Remove the outer plate with pins.



Couple the new chain with the old chain by using the outer plate with pins of the chain lock.



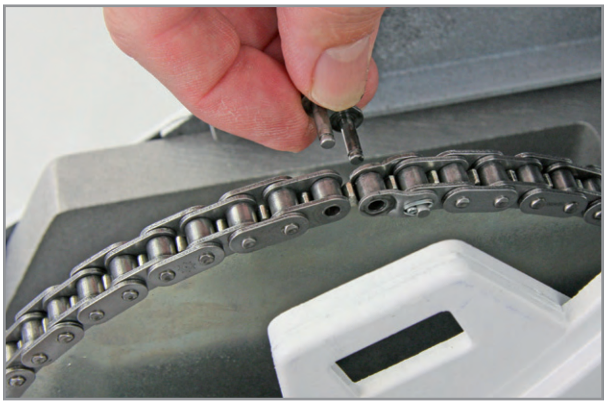
Drawing at the old cahin, mount the new chain on the sprocket



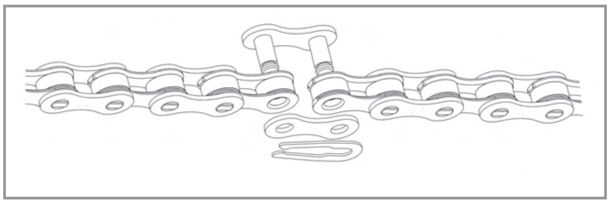
Disassemble the old chain.

Close the new chain:

Bring the two ends of the new chain together and connect with the chain lock:

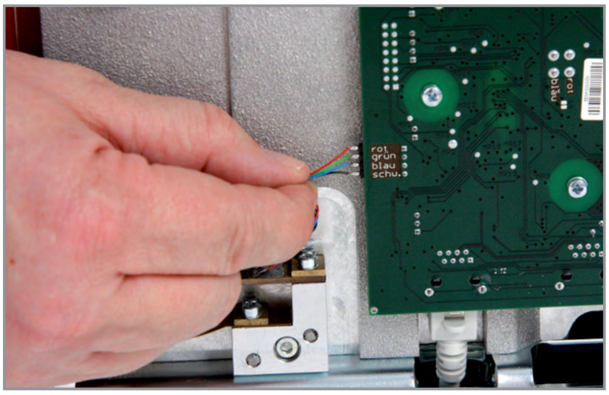


- Insert outer plate with pins into the chain ends, attach outer plate and press chain lock together.
- Attach retaining spring with the closed end of the retaining ring pointing in the direction of chain travel.
- Slide retaining spring in the grooves in the pins.

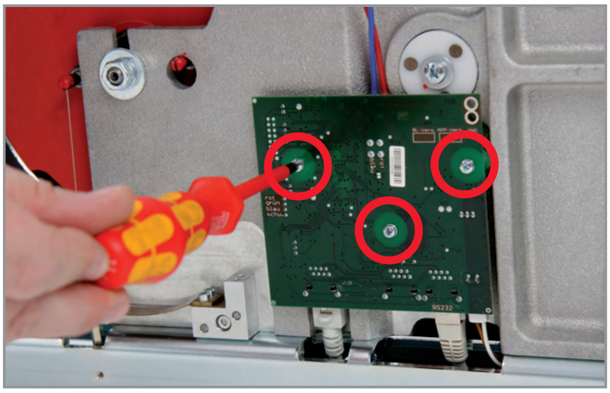


LRE BOARD EXCHANGE

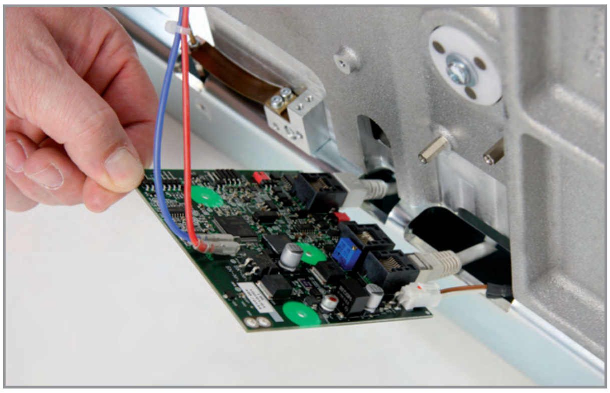
- disconnect strain gauge unit cable



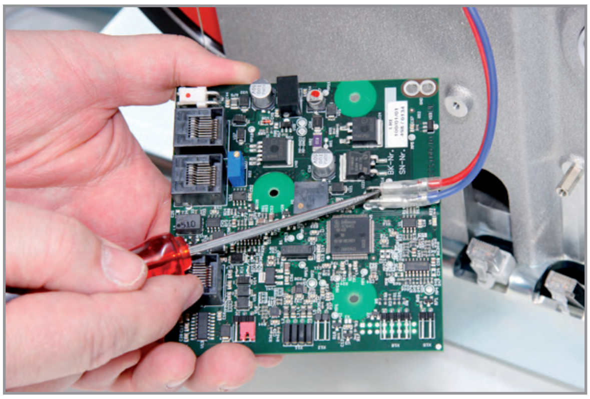
- remove 3 Phillips screws



- swing down the LRE board
- disconnect the RJ-45 cables
- disconnect the power supply connector

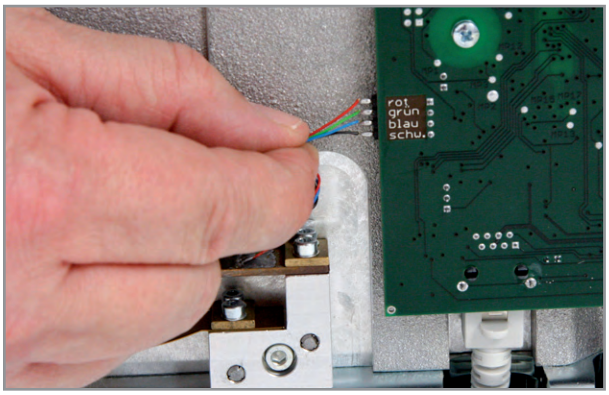


- remove the cable shoes to the eddy current brake by using a flat screw driver

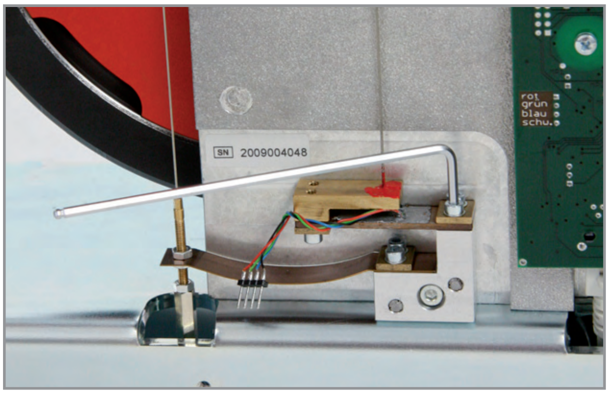


DMS EXCHANGE

- Remove the DMS cable from the LRE board


rot
grün
blau
schu.

- Loose 2 Allen key screws


SN 2009004048
rot
grün
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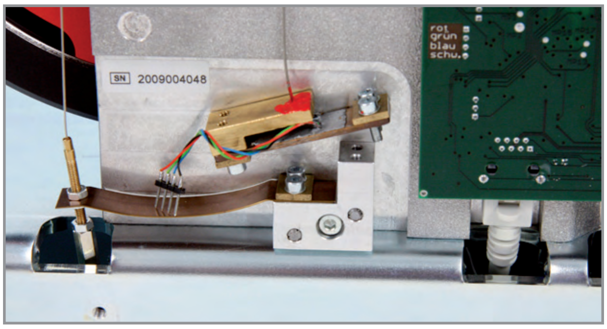
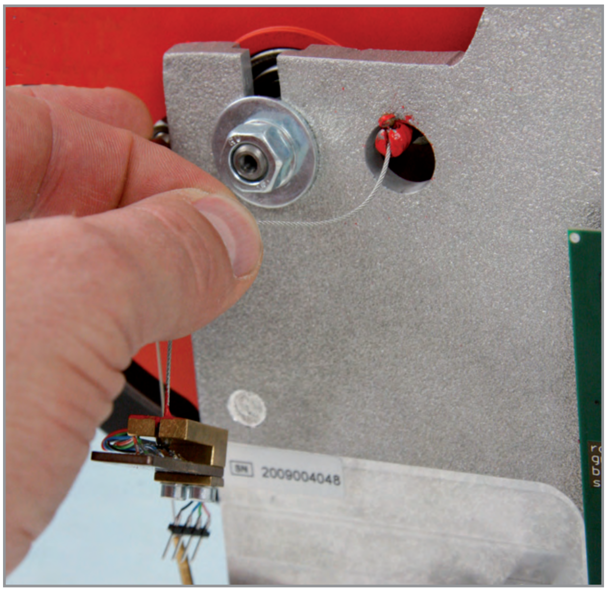
schu.

- The strain gauge unit hangs at the tensioning rope


SN 2009004048
rot
grün
blau
schu.

- Scratch the sealing wax from the top suspension of the tensioning rope (e.g. by use of a screw driver)

- Remove the tensioning rope to the top by pulling it off the vertical slot


SN 2009004048

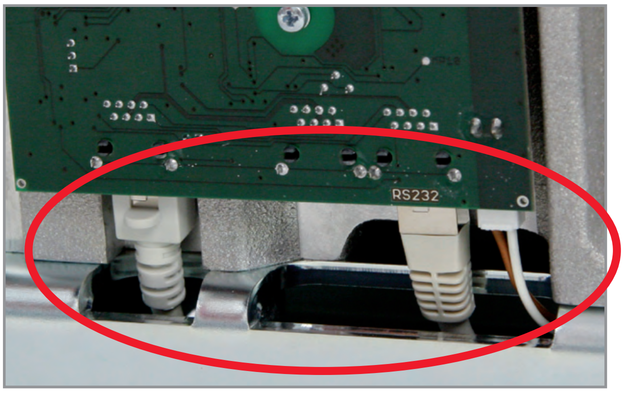
The assembly of the replacement DMS unit is performed in reverse order.

WARNING: The rubber coated side of the strain gauge should not be hurt !!

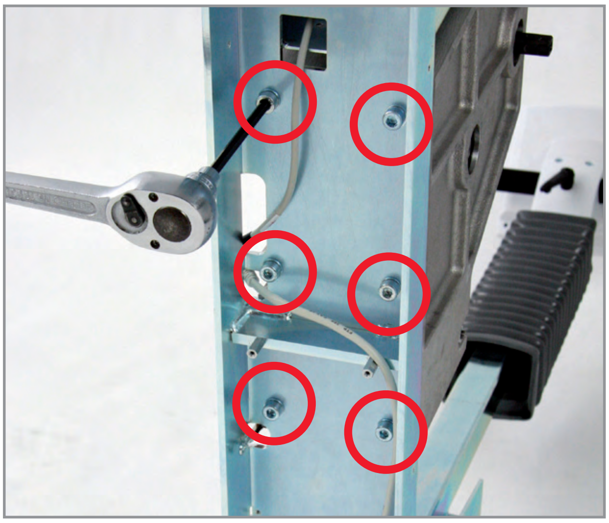
To fix the tensioning rope in the upper fixture, a standard glue can be used.

LOAD UNIT EXCHANGE

- Remove the ergometer housing (see detailed description at the appropriate ergometer type)



- Disconnect the patch cables and the power supply cable from the LRE board



- The load unit is fixed with 6 Allen key screws at the ergometer chassis.
  Loose the screws with a ratchet - prevent the load unit from falling down (weight approx.10 kg)

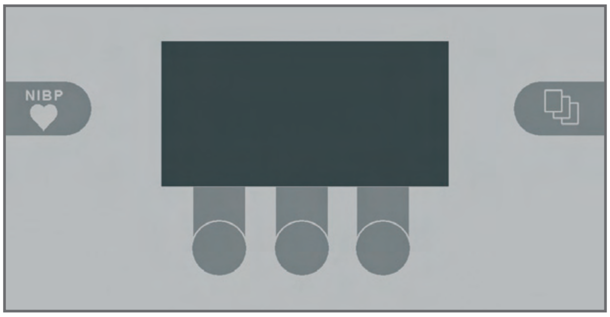
SERVICE MENU

The ergometer software is controlled with 5 keys:

⧉ With this key you display the main menu or return to the previous menu level.

NIBP ♥ With this key you initiate a blood pressure measurement. A measurement in progress can be aborted with the same key.

● ● ● The functions of these three softkeys change with the displayed menu - the key label describing the function is shown on the display.



Keypad

45
10
61
Watt
min
P/min
147/ 91
mmHg
73
♥/min
+5W
Ende
-5W

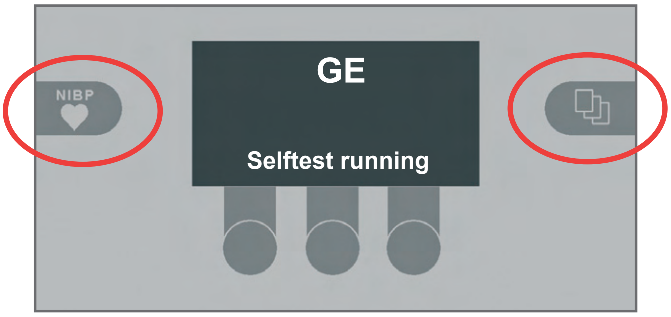
TURNING THE SYSTEM ON

You turn the ergometer on by pressing the power switch - the green indicator in the switch lights up.
The ergometer runs a self-test.

As soon as the self test appears on the ergometer display, press the two softkeys

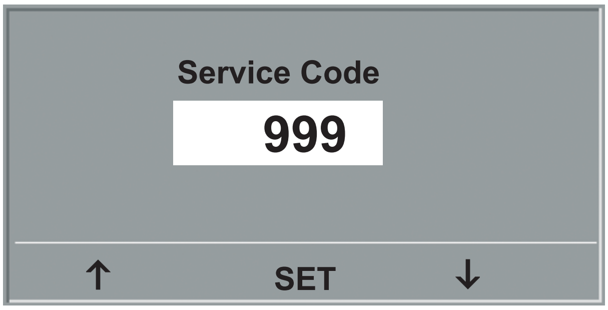
NIBP ♥ ⧉

synchronously and hold.



Activating the service menu

To prevent settings from being changed by chance, the service menu is „protected“ by a password.
Select „999“ with the arrow keys and confirm with SET.



Service Code

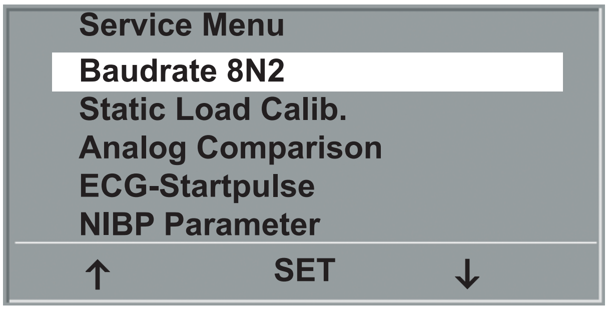
999

Password for service menu

The service menu with the following parameters appears:

- Baudrate 8N2
- Static Load Calibration
- Analog Comparison (with option COM only)
- ECG-Startpulse
- NIBP Parameter (with option NIBP only)
- Software Update
- Dynamic Load Calibration
- PC-Mode
- Saddle Calibration (eBike II comfort only)
- Service Date
- NIBP Calibration (with option NIBP only)
- NIBP Test (with option NIBP only)
- Ergometer Type (without option NIBP only)
- System Config.
- Error log

Select the desired parameter by use of the right and left softkeys (↑ ↓) and confirm with SET.



SELECTION OF PARAMETERS IN SERVICE MENU

Hint

- *The service menu in the ergometers is available in english only.*
- *Depending on the actual ergometer configuration, not all settings are visible.*
- *Leaving the service menu is only possible by switching the device off.*
- *The sequence of the following descriptions does not follow the sequence in the service menu.*

DEFAULT SETTINGS

SETTINGS MENU

default mode	menu	
protocols	see operator manual	
contrast	at optimum	
load change	+/- 5W	
language	US devices	english
	other devices	german
beep	ON	
date/time	current values	
ECG type	digital	
rpm	min: 54 / max: 65	
pulse display	OFF	

SERVICE MENU

Baudrate 8N2	4800	
ECG-Startpulse	leadtime:	60 sec
	pulswidth:	100 msec
NIBP Parameter	leadtime:	60 sec
	Resting NIBP:	ON
PC-Mode-Automatic:	ON	
Ergometer Type	ER900	
Analog comparison	20W = 0,2 V / 300W = 3.0 V	
System Config.		
Saddle engine	eBike basic/L/EL	0
	eBike comfort	1
NIBP module	devices w/o NIBP	0
	devices with NIBP	I
Analog interface	0	
60 Hz Power	US devices	1
	other devices	0

Static Load Calibration

The static calibration of the load unit is described in the separate chapter „Calibration / alignment“.

Dynamic Load Cal.

To perform a dynamic load calibration, a calibrated dynamic test bench is needed.

The dynamic calibration of the load unit is described in the separate chapter „Calibration / alignment“.

Software Update

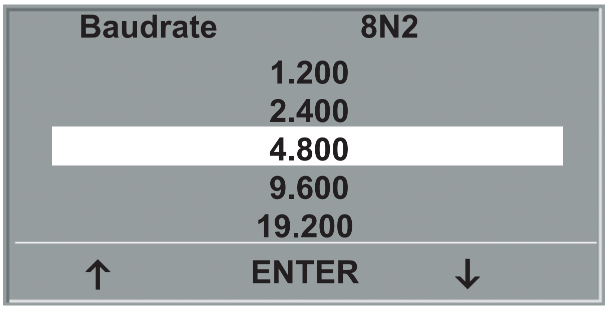
For a description of a software update of the ergometer (firmware) see the separate chapter „Software update“.

Baudrate 8N2

The baudrate can be selected between 1.200 Baud and 115.000 Baud.
Default value for standard ergometers is 4.800 Baud.

Hint

- *The baudrate must be set to 4800 baud always!*



Baudrate 8N2

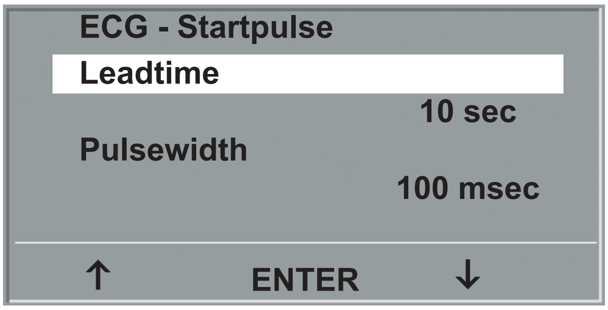
1.200
2.400
4.800
9.600
19.200

Selection of serial baudrate

Select the desired parameter by use of the right and left softkeys (↑ ↓) and confirm with ENTER.

ECG Startpulse

To configurate the remote start pulse for external ECG recorders (ergometer is controlled by internal programs).



ECG - Startpulse

Leadtime
10 sec

Pulsewidth
100 msec

Configuration of ECG remote pulse

Select the desired parameter by use of the right and left softkeys (↑ ↓) and confirm with ENTER.
Adjust the appropriate valuewith the arrow keys and store the value with ENTER.

Leadtime
Remote pulse leadtime before the next load step

Setting range: 1 to 30 sec. in 1 sec. steps

Pulsewidth
Remote pulse pulse width

Setting range: 100 to 1000 ms in 100 msec steps

NIBP Parameter

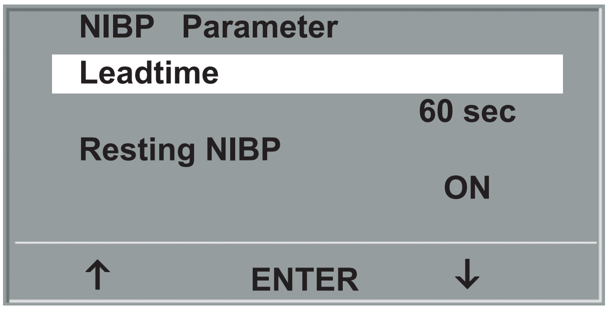
If the ergometer load is controlled by the internal programs, this parameter defines the start of the NIBP module.

Leadtime
Defines the leadtime of the bloodpressure measurement to the next load step

Setting range: 40 to 90 sec. in 1 sec. steps

Resting NIBP
Defines whether or not a resting bloodpressure measurement is taken before starting the stress test.

Setting range: OFF - ON

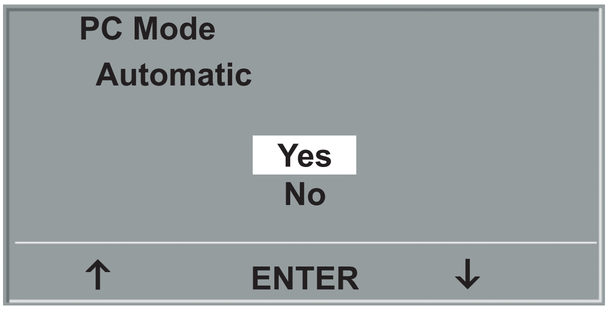


NIBP Parameter
Leadtime
60 sec
Resting NIBP
ON

Configuration of NIBP Parameters

PC-Mode

PC-Mode „Automatic“
If „YES“ is activated, the ergometer automatically switches to remote mode (PC mode) as soon as a valid signal is received from the interface.



PC Mode
Automatic
Yes
No

Automatic Mode

Saddle Calibration

(eBike II comfort only)

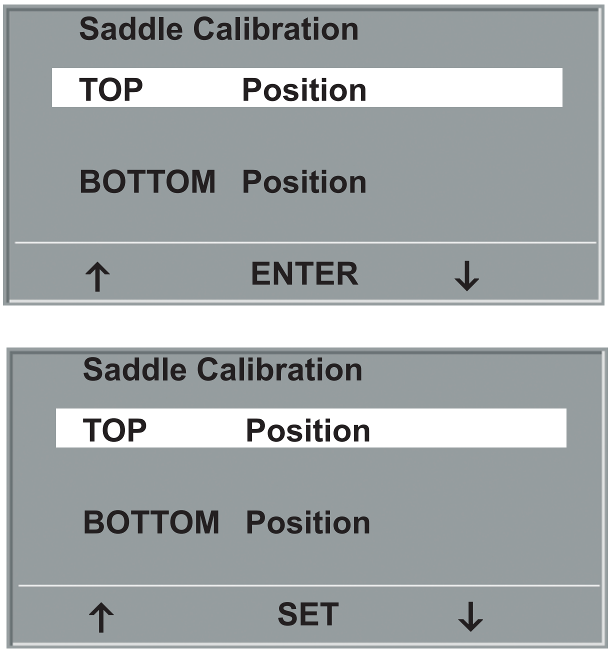
This parameter is used to adjust the electrical saddle motor. (display scale 1-40)

Select „**TOP Position**“ and confirm with **„ENTER“.**

By use of the arrow keys, move the saddle to the desired top position (standard 36 cm above saddle guidance) and confirm with „**SET**“.

Select „Bottom **Position**“ and confirm with **„ENTER“.**

By use of the arrow keys, move the saddle to the desired bottom position (standard 7 cm above saddle guidance) and confirm with „**SET**“.



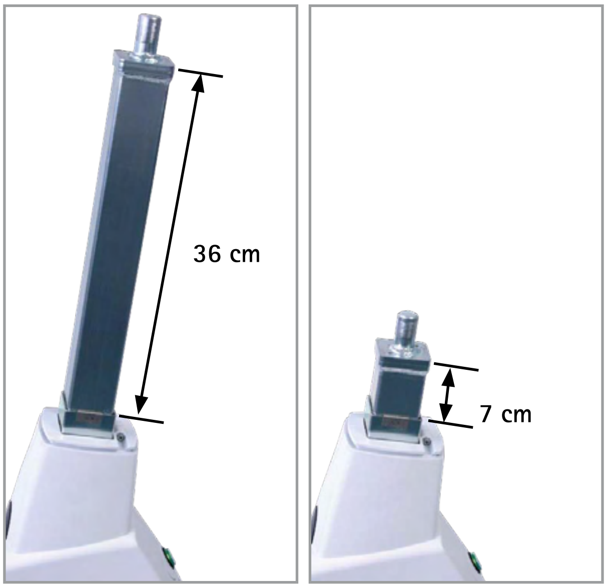
Saddle Calibration
TOP Position
BOTTOM Position

Saddle Calibration
TOP Position
BOTTOM Position

Calibration of electrical saddle adjustment

Hint

- *Do not move the saddle over the „TOP position“ (36 cm) and under the „BOTTOM position“ (7 cm - see pictures).*
- *If the motor is moved to the mechanical stop positions, the eBike power supply will switch off due to overload.*



Correct positions for saddle adjustment

Ergometer Type

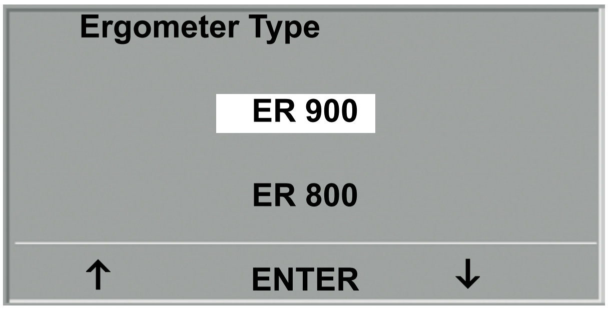
This setting appears only in eBike II **without** NIBP option!

If in PC mode an „I“ command is received, the ergometer sends an identification data string to the PC. / ECG recorder.

To maintain compatibility to ergoline ergometers of the former generation, the eBike II ergometer identify as Ergometrics 900 ergometers.

The identification may be changed by use of this parameter:

setting ER900 identifies with:	0900P10V243
setting ER800 identifies with:	V3.3



Ergometer Type

ER 900

ER 800

↑ ENTER ↓

Configuration of identification data string

Hint

- *Must be set to ER900 always !*

System Config.

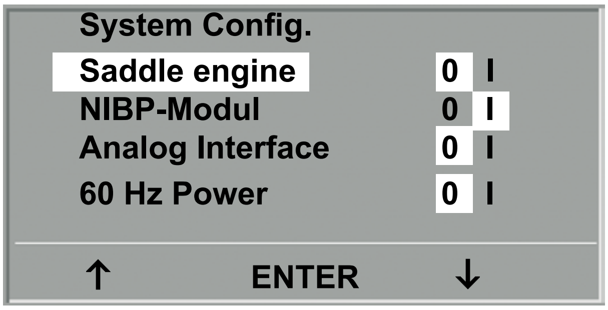
The hardware configuration of the ergometer is defined in this setup.

Select the module / option and change the setting to I if the module is integrated in the actual ergometer.

60 Hz Power:
This setting depends on the mains frequency used and sets internal filters on the LRE board:
Select 0 for a 50 Hz mains frequency
Select I for a 60 Hz mains frequency

Hint

Wrong setting of the mains frequency has no influence on the load regulation or the correct function of the ergometer.



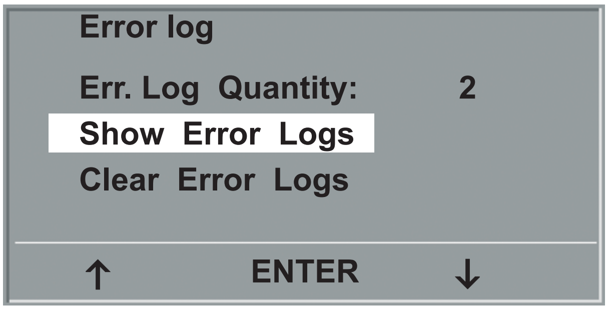
System Config.
Saddle engine 0 I
NIBP-Modul 0 I
Analog Interface 0 I
60 Hz Power 0 I
↑ ENTER ↓

Settting of ergometer configuartion

ERROR LOG

The software of the eBike II ergometers stores internal error messages in a special memory area (error log file). These error messages can be checked and cleared in this menu.

To display the stored error messages select „Show Error Log“ and confirm with ENTER.


Error log

Err. Log Quantity: 2

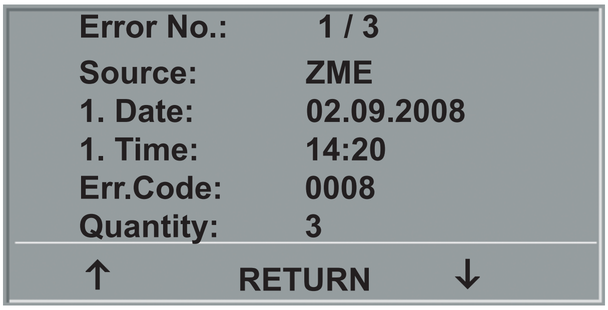
ERROR LOG MEMORY

The first error message is displayed:

Source:	The unit generating the error
1. Date:	Date of first occurence of this error
1. Time:	Time of first occurence of this error
Err.Code:	Corresponding error code of the software
Quantity:	Number of occurences of this error

By using the arrow keys, the following error messages can be displayed.

RETURN closes the error log display


Error No.: 1 / 3
Source: ZME
1. Date: 02.09.2008
1. Time: 14:20
Err.Code: 0008
Quantity: 3

DISPLAYING A SINGLE ERROR

NIBP TEST / NIBP CALIBRATION

This menu is visible, if the ergometer is equipped with an automatic NIBP module and this module is activated.

Test and calibration of the NIBP module is described in the separate chapter „Calibration / alignment“.

ANALOG COMPARISON (CALIBRATION)

This function is used to allign the analog remote signals (input and output) to the corresponding ECG devices.

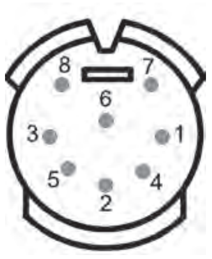
The eBike II ergometers have to be equipped with the optional „COM-Modul“. This module is placed onto the 9-pin DSUB connector and screwed to the chassis.

Additionally, a jumper connector has to be placed on the BKE board.

The COM module handles one analog input and 6 analog output signals from/to external devices.

Hint

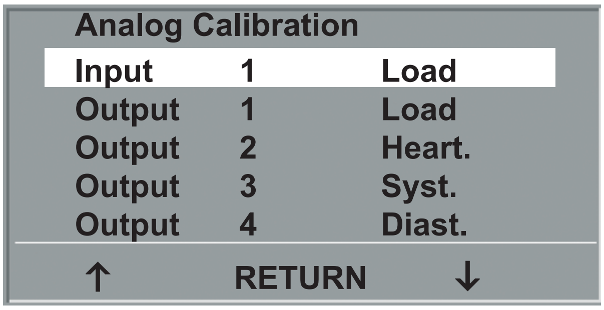
- *To allign the analog load signals, the corresponding ECG recorder should be connected as a reference voltage source.*
- *Disconnect a RS232- or USB cable, if connected.*
- *The allignment of the analog signals can be controlled after leaving the service menu (e.g. by starting a remote controlled stress test).*



SIGNAL ASSIGNMENT OF ANALOG CONNECTOR (COM MODULE)

Pin 1: INPUT Load
Pin 2: reserved - do not connect
Pin 3: reserved - do not connect
Pin 4: OUTPUT BP heartrate
Pin 5: OUTPUT Load
Pin 6: OUTPUT Diastole
Pin 7: OUTPUT rpm
Pin 8: OUTPUT Systole
Housing: Signal GND

Select the analog signal to be aligned and confirm with ENTER.


Analog Calibration
Input 1 Load
Output 1 Load
Output 2 Heart.
Output 3 Syst.
Output 4 Diast.

ALIGNMENT OF ANALOG INPUT / OUTPUT SIGNALS

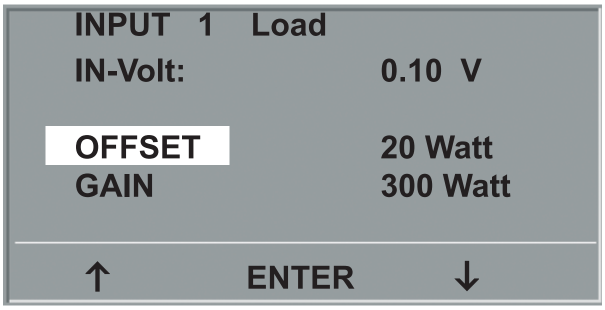
Alignment „Input: Analog Loadcontrol“

IN-Volt: displays the voltage at the analog input

Set the ECG recorder output to a low load value
(e.g. 20 Watt).

The according voltage is displayed (IN-Volt).
Wait until the voltage has settled.

Select „OFFSET“ and confirm with ENTER.



INPUT 1 Load

IN-Volt: 0.10 V

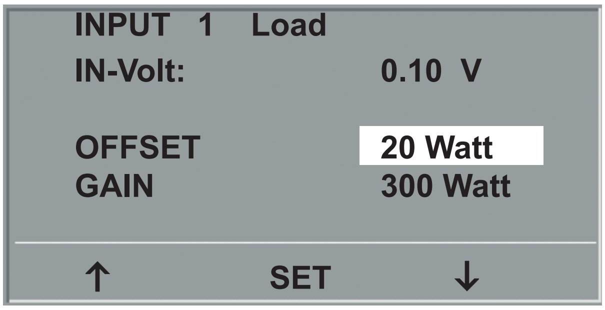
OFFSET 20 Watt

GAIN 300 Watt

Alignment of analog input „load“

By using the arrow keys set the load value to the ECG recorder vaue (e.g. 20 Watt) and confirm with SET.

The setting is stored in the ergometer.



INPUT 1 Load

IN-Volt: 0.10 V

OFFSET 20 Watt

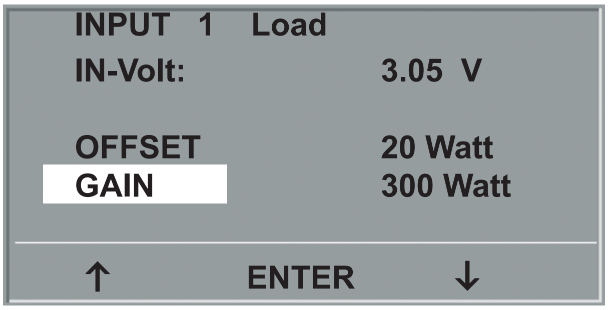
GAIN 300 Watt

Offset Alignment of analog input „load“

Set the ECG recorder output to a high load value
(e.g.300 Watt).

The according voltage is displayed (IN-Volt).
Wait until the voltage has settled.

Select „GAIN“ and confirm with ENTER.



INPUT 1 Load

IN-Volt: 3.05 V

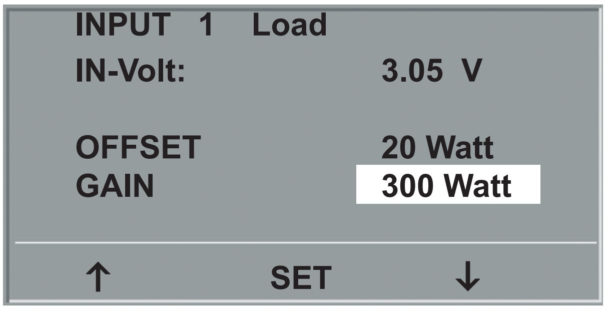
OFFSET 20 Watt

GAIN 300 Watt

Alignment of analog input „load“

By using the arrow keys set the load value to the ECG recorder vaue (e.g. 300 Watt) and confirm with SET.

The setting is stored in the ergometer.



INPUT 1 Load

IN-Volt: 3.05 V

OFFSET 20 Watt

GAIN 300 Watt

Gain alignment of analog input „load“

Setting range:

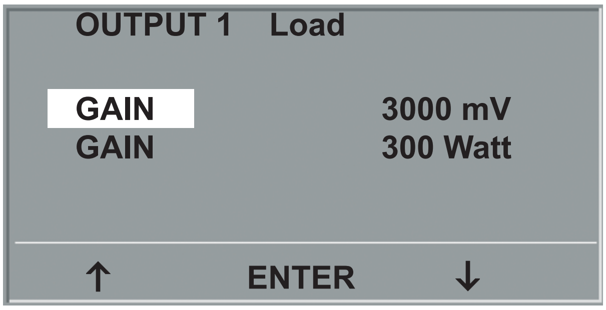
OFFSET: range from 20 to 1000 Watt in 10 Watt steps
GAIN: range from 20 to 1000 Watt in 10 Watt steps

Alignment „Ouput: Analog Load value“

The output voltage representing a special load value of the ergometer is defined with this setting.

It is possible to adjust the voltage and / or the load value.

Select the parameter by use of the arrow keys and confirm with „Enter“

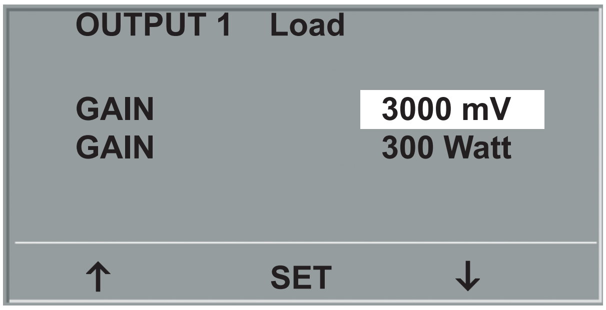


OUTPUT 1 Load

GAIN 3000 mV

GAIN 300 Watt

Adjust the value by using the arrow keys and store the setting with SET.



OUTPUT 1 Load

GAIN 3000 mV

GAIN 300 Watt

Alignment of analog output „load“

Setting range:

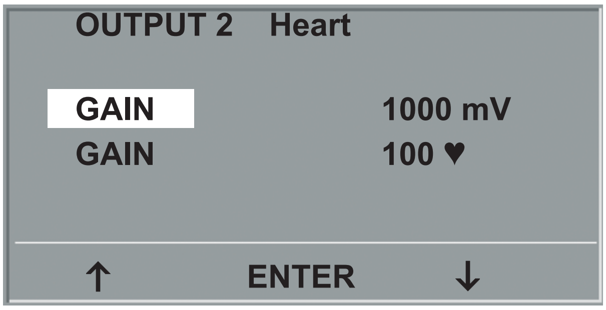
GAIN:(voltage)	20 mV to 10000 mV in steps of 2 mV
GAIN (load)	20 to 999 Watt in steps of 10 Watt

Alignment „Output: Analog Heartrate“

The output voltage representing a special heartrate is defined with this setting.

It is possible to adjust the voltage and / or the heartrate value.

The setting is performed as described above under **Alignment „Ouput: Analog Load value“**



OUTPUT 2 Heart

GAIN 1000 mV

GAIN 100 ♥

Setting range:

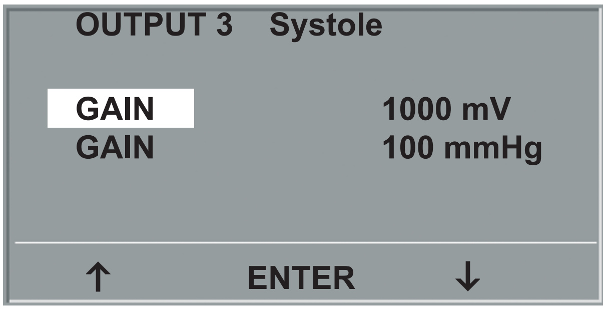
GAIN (voltage):	500 to 2000 mV in 2 mV steps
GAIN (heartrate):	50 to 250 bpm in 10 bpm steps

Alignment „Ouput: Analog Systole“

The output voltage representing the systolic value is defined with this setting.

It is possible to adjust the voltage and / or the systolic value.

The setting is performed as described above under **Alignment „Ouput: Analog Load value“**



OUTPUT 3 Systole

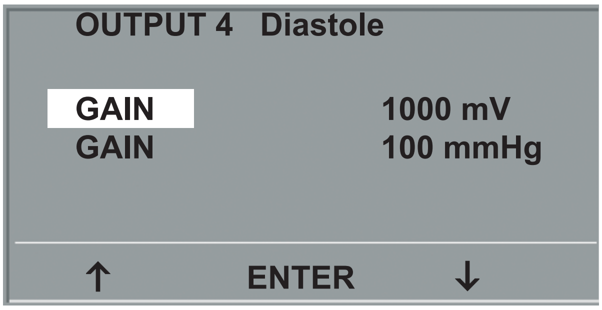
GAIN 1000 mV

GAIN 100 mmHg

Setting range:

GAIN (voltage):	500 to 2000 mV in 2 mV steps
GAIN (systole):	50 to 250 mmHg in 5 mmHg steps

Alignment „Ouput: Analog Diastole“


OUTPUT 4 Diastole

GAIN 1000 mV
GAIN 100 mmHg

The output voltage representing the diastolic value is defined with this setting.

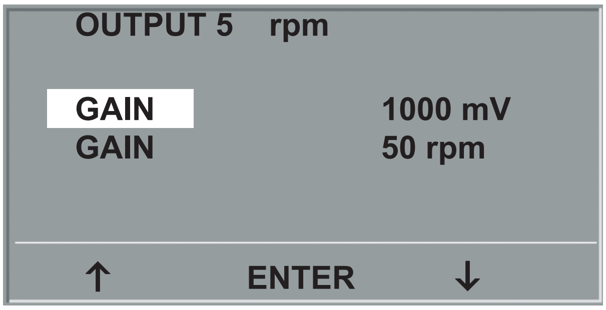
It is possible to adjust the voltage and / or the diastolic value.

The setting is performed as described above under **Alignment „Ouput: Analog Load value“**

Setting range:

GAIN (voltage):	500 to 2000 mV in 2 mV steps
GAIN (diastole):	50 to 250 mmHg in 5 mmHg steps

Alignment „Ouput: RPM“


OUTPUT 5 rpm

GAIN 1000 mV
GAIN 50 rpm

The output voltage representing the actual rpm value is defined with this setting.

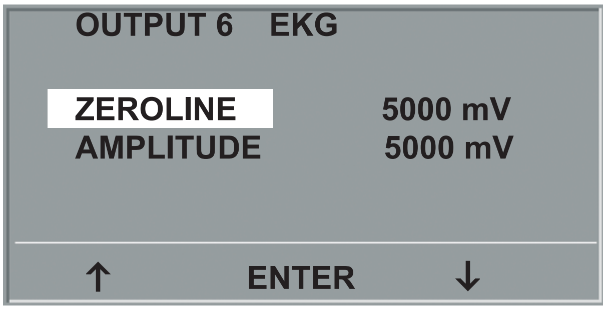
It is possible to adjust the voltage and / or the rpm value.

The setting is performed as described above under **Alignment „Ouput: Analog Load value“**

Setting range:

GAIN (voltage):	200 to 1000 mV in 2 mV steps
GAIN (rpm):	30 to 130 rpm in 5 rpm steps

Alignment „Output: ECG“


OUTPUT 6 EKG

ZEROLINE 5000 mV
AMPLITUDE 5000 mV

(For eBike II REHA Ergometer with integrated ECG amplifier only)

The zeroline and the amplitude of the analog ECG output signal is defined.

The setting is performed as described above under **Alignment „Ouput: Analog Load value“**

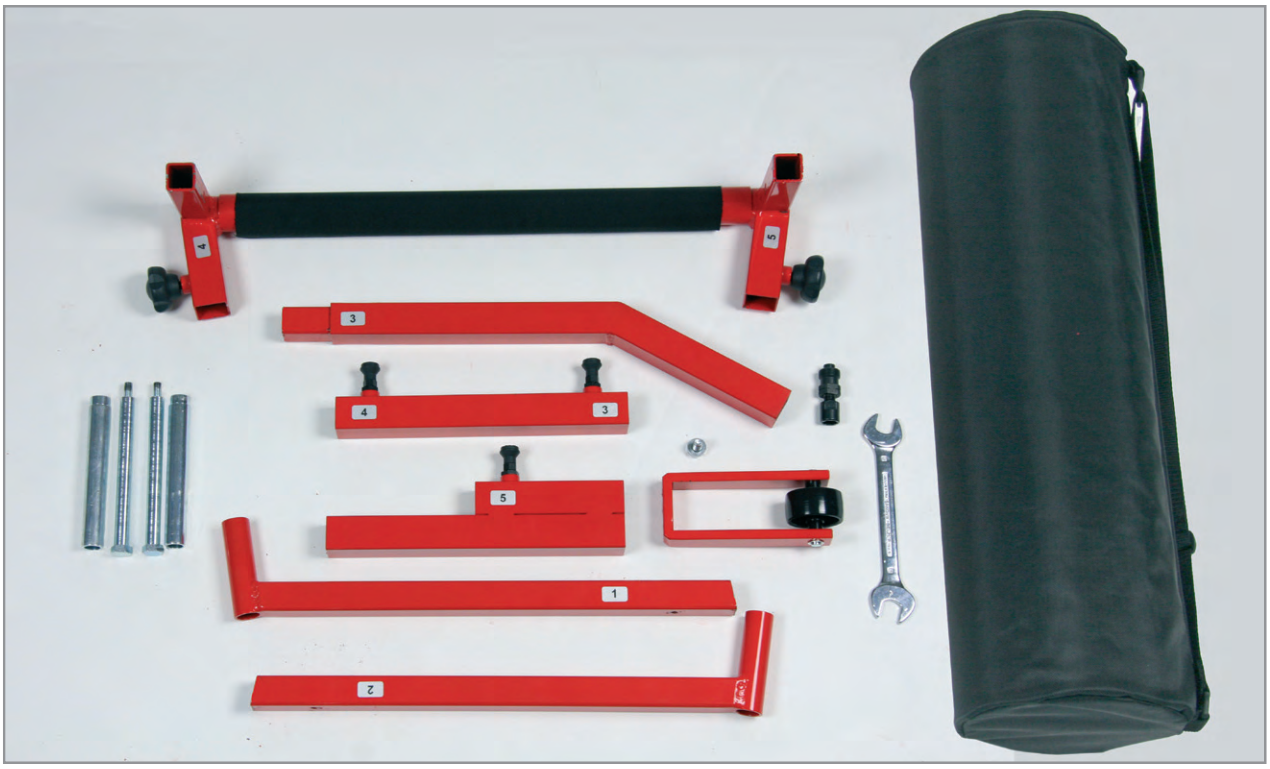
Setting range:

ZEROLINE:	200 to 10000 mV in 10 mV steps
AMPLITUDE	200 to 10000 mV in 10 mV steps

ALIGNMENT / CALIBRATION

STATIC CALIBRATION

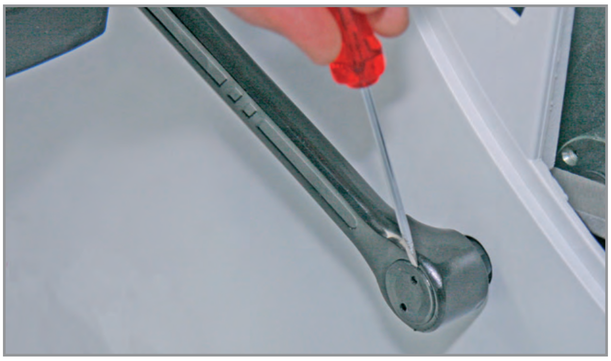
LIFT-UP TOOL FOR EBIKE BASIC / COMFORT



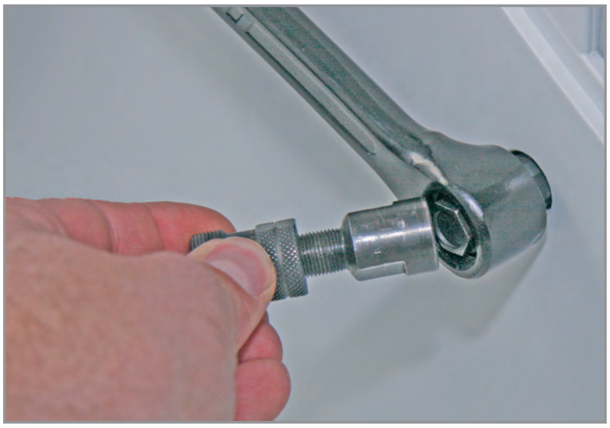
PARTS OF ERGOMETER LIFT-UP TOOL

DISMOUNT PEDAL CRANK SCREWS

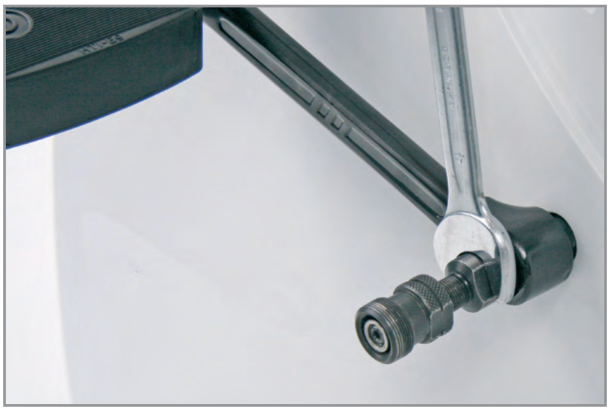
- Carefully lift the protective cover off the crank, using a small flat screw driver.



- Plug the extractor (P/N 2005737-001) onto the screw of the crank

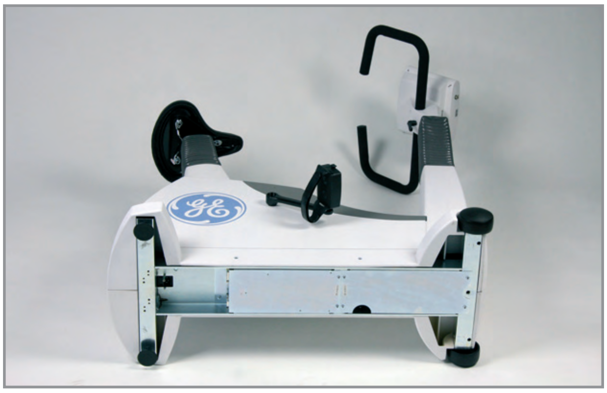


- Lose the screw with an open ended wrench (17 mm)
- Remove the screw and the lock washer
- DO NOT REMOVE THE CRANKS !

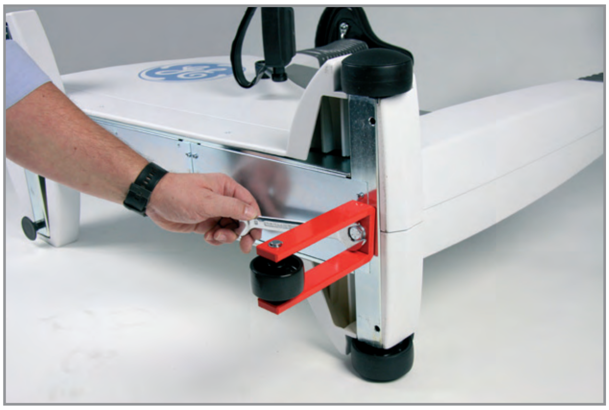


MOUNTING THE FRONT SUPPORT

- Tilt the ergometer onto the left side



- Mount the front support with the screw M10 x 20

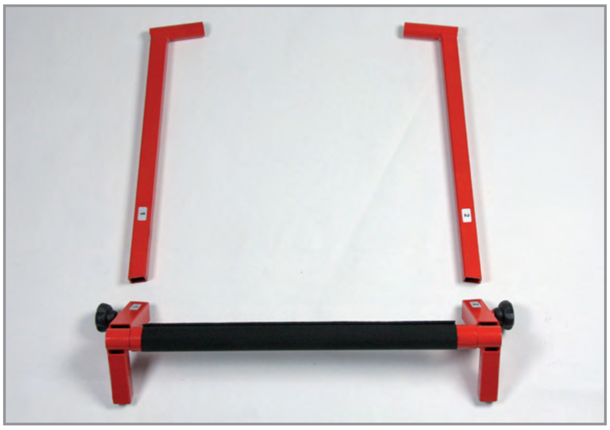


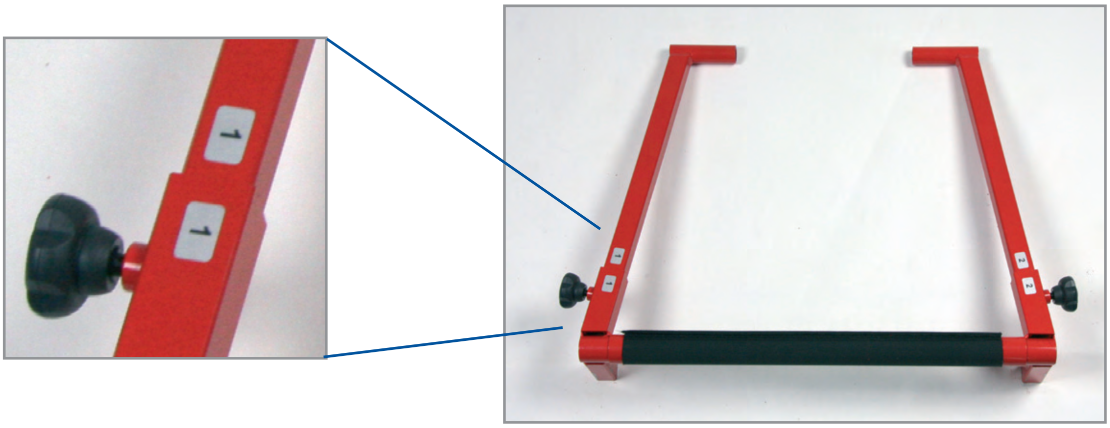
- Bring the ergometer back in an upright position

MOUNTING THE MAIN SUPPORT FRAME

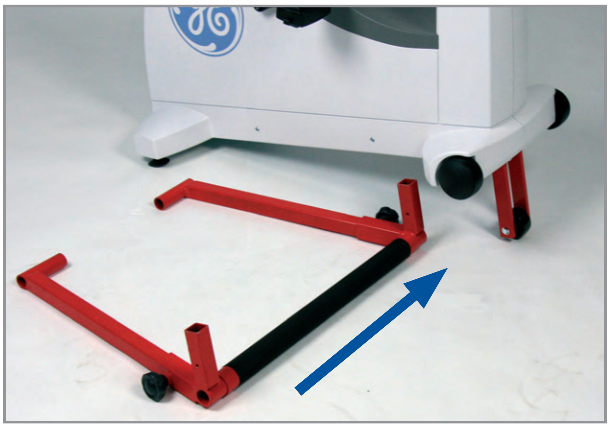
- Assemble the main support frame by plugging the two angled piped in the appropiate counter parts (marked 1 /1 and 2 / 2 until the lock and clamp indexing plunger clicks into place

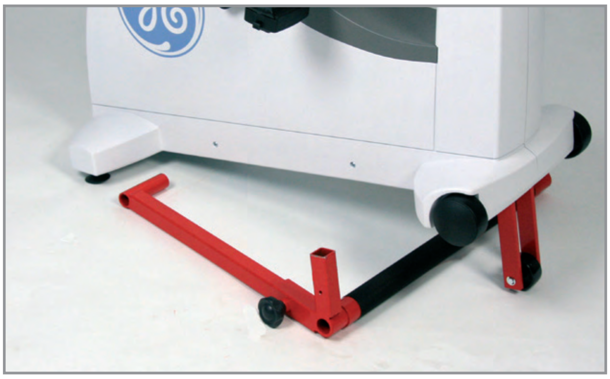
- Fix the connections by clockwise screwing the plunger





- Turn-over the main support frame and shift it under the ergometer

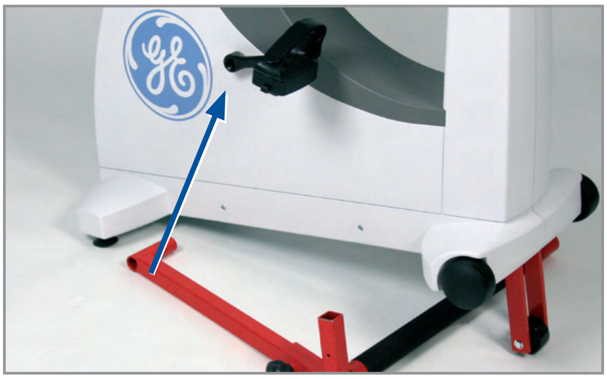




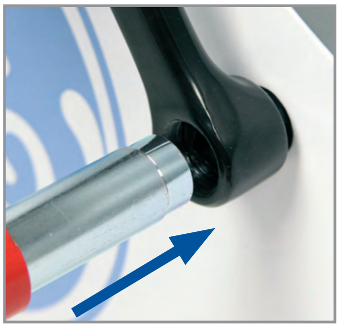
Hint

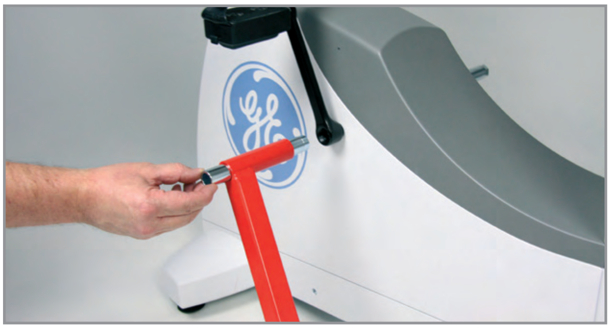
The support frame should lie symmetrically under the ergometer.

- Lift the side arms of the main support frame and adjust them before the crank threads
- Pay attention to identic distance between crank thread and tube on both sides

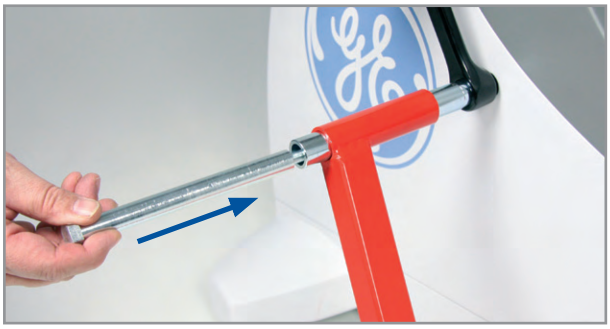


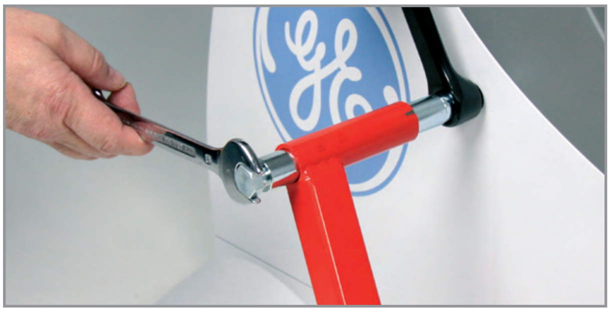
- Insert the bushings through the frame into the cranks:
  - the shoulder have to fit completely into the crank
  - check for equal distance on both sides



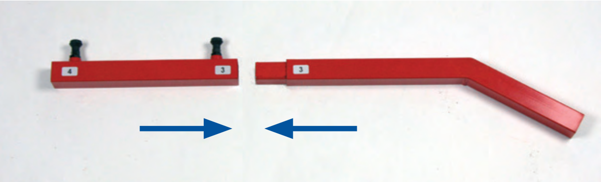


- Insert the long screws with a washer through the bushings and screw them tight into the cranks

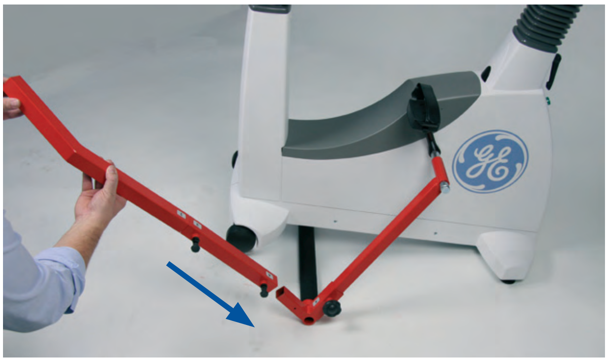




- Mount the lifting arm (marked 3 / 3)

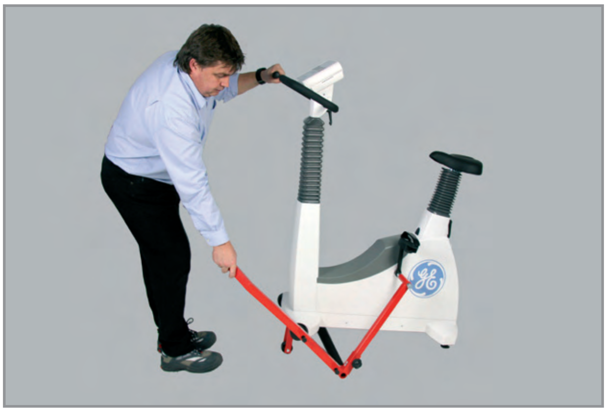


- Push the lever arm into the base frame (4 / 4) and tighten it



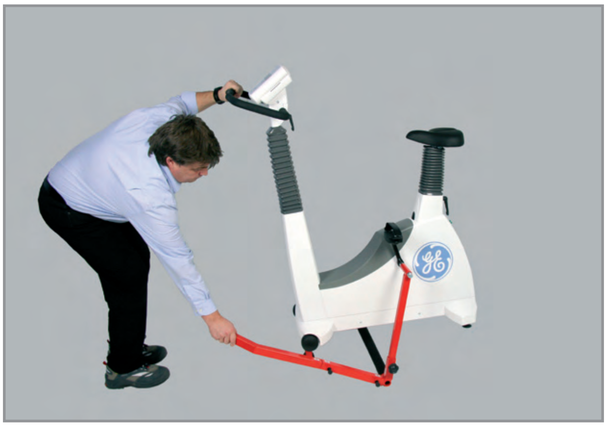
LIFTING UP THE ERGOMETER

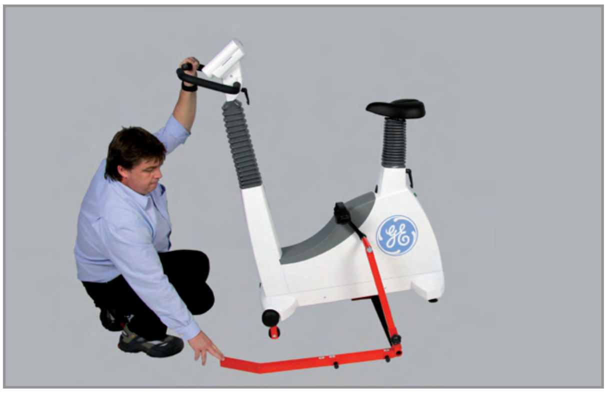
- Stand in front of the ergometer
- Stabilize the ergometer with one hand at the handle
- Press the lever arm downwards until it lies flat on the bottom and the ergometer stands on the front support.



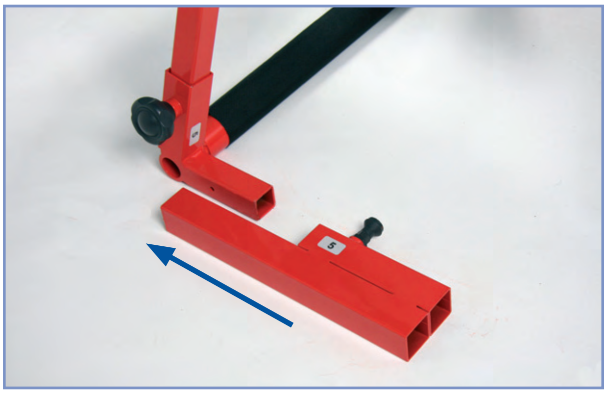
Caution

During lift-up, the ergometer will move forward (approx. 20 cm) !



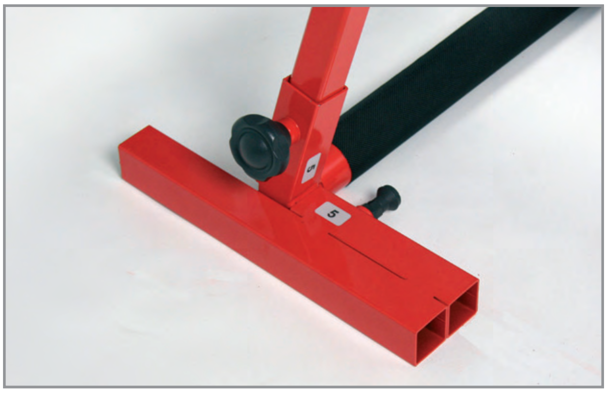


- For safety reasons, a tilt protection has to be mounted (marked 5 / 5).

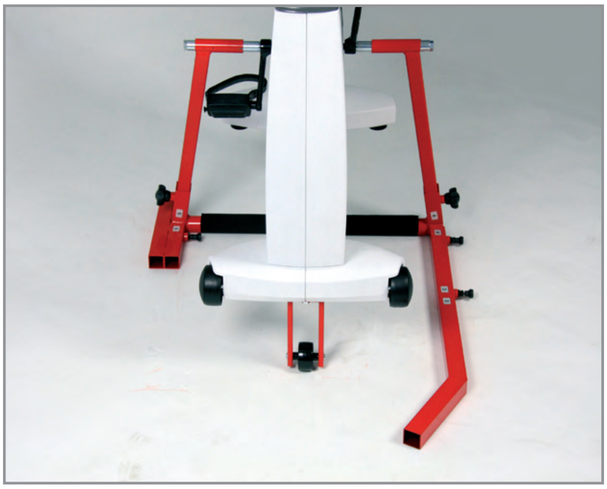


Warning

If the ergometer is lifted up, the tilt protection has always to be mounted and secured!



- The static calibration with 8kg weight can be performed.



ERGOMETER IN LIFT-UP POSITION WITH TILT PROTECTION MOUNTED

UNLIFTING THE ERGOMETER

- Dismount the tilt protection (5 / 5).
- Carefully lift the lever arm of the main support frame whilst holding the ergometer at the handle bar, until the ergometer chassis stands stable on the floor and the front support.
- Disassemble the lift tool in reverse order.

Preparing eBike II L / EL

Note

Additional accessories required for load calibration of eBike L / eBike EL:

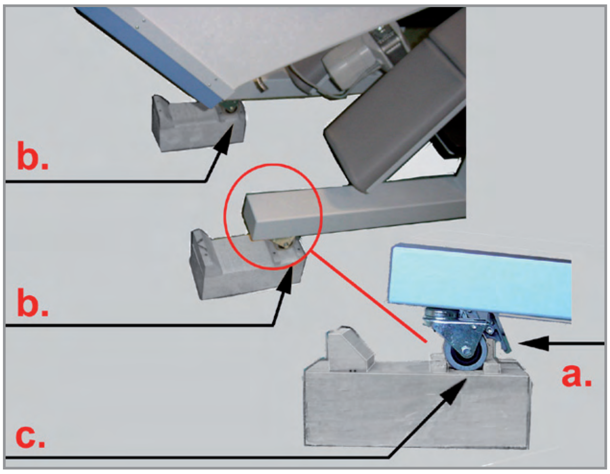
- *calibration stay for eBike L / eBike EL (P/N 2018111-134 SPARE EBIKE L&EL SUPPORT FOR CALIBRATION)*
- *8-kg calibration weight for eBike L / eBike EL* (P/N 2018111-135 SPARE EBIKE L&EL CALIBRATION WEIGHT 8KG)
- *2nd persons to assist in lifting the couch ergometer*

- Place the ergometer on a level surface and put it into operation.
- Set the back rest of eBike L to an angle of 45° (semi-recumbent position), using the remote control.

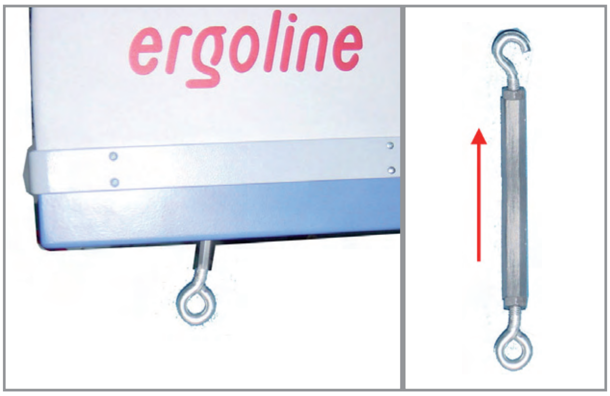
  Adjust eBike EL to a lateral tilt of 0°, using the remote control.
- Then set the back rest to an angle of 45° (semi-recumbent position).
- Turn the front castors of eBike L/EL to the back and lock the castor brakes (see arrow a. in illustration).
- To begin with, lift the eBike L/EL at the front, left hand side and place the calibration support under the left castor (see arrow b. in illustration).

  Then lift the eBike L/EL at the front, right hand side and place the calibration support under the right castor.

  Caution:
  The castors must be located between the two border strips (see arrow c. in illustration).



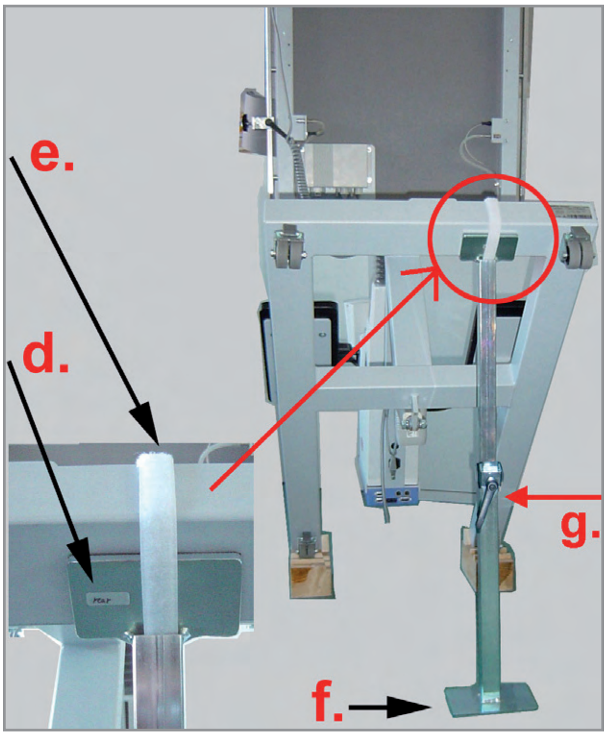
- Extend the calibration stay to approx. 835 mm and lock.
- Hang the hook of the calibration weight adaptor into the eye of the strain gauge return spring and let hang.



- With the aid of an assistant, lift the couch ergometer eBikeL / EL at the back of the base and position the calibrationstay labelled „rear“ (see d. in illustration) to the right of the center brace below the transverse frame.

- Attach the calibration stay to the base, using adhesive tape (see e. in illustration).

- Lift the base a little and wait for the calibration stay to stop swinging.



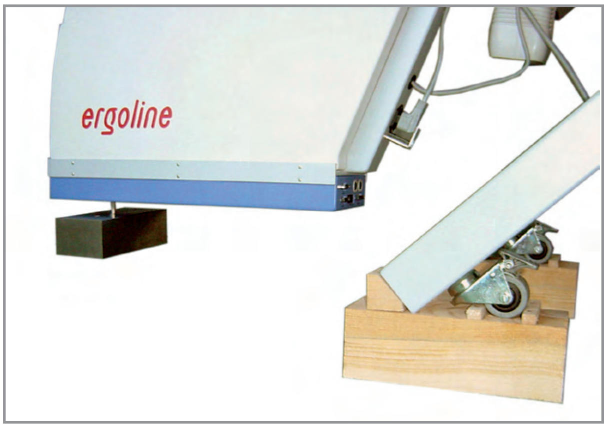
Caution

- *Place a weight (e.g. the tool chest) on the baseplate of the calibration stay.*
- *Make sure that both sides of the transverse frames it in the calibration stay and that the stay itself is in a stable position*

- With the aid of the calibration stay, align the bottom edge of the connection box exactly horizontal.

- To do so, open clamping lever g and adjust top section.

- Perform calibration (see following section)



Static calibration with calibration weight

The alignment and calibration procedures (static load calibration, dynamiv load calibration, NIBP calibration) are identical for all eBike II ergometers.

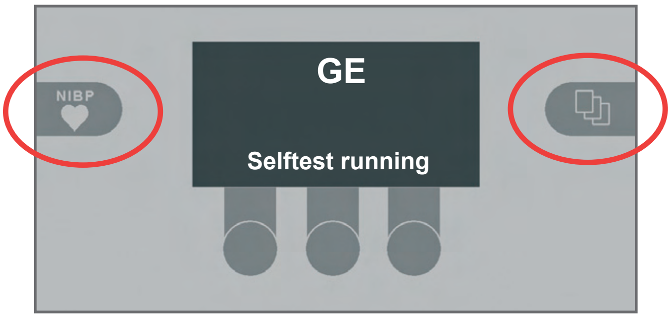
All calibration processes are started in the service menu.

To activate the service menu the ergometer has to be switched off and on again.

As soon as the self test appears on the ergometer display, press the two softkeys

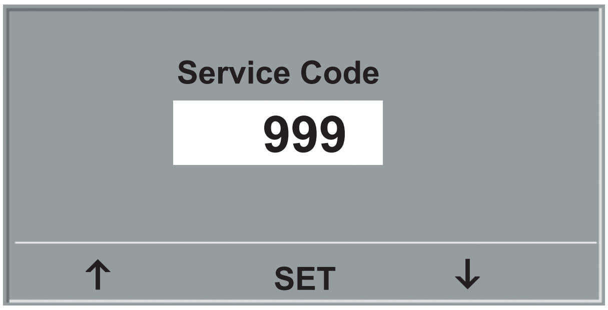
NIBP ♥ ⧉

synchronously and hold:


NIBP
GE
Selftest running

Service menu control terminal

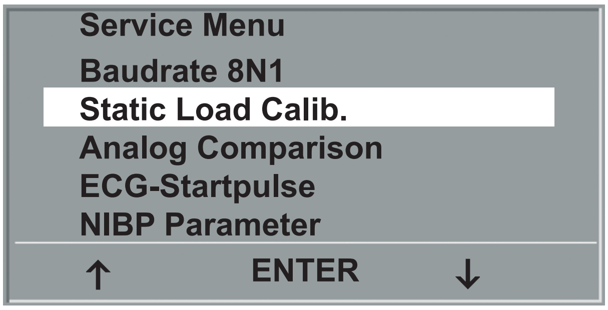
To prevent settings from being changed by chance, the service menu is „protected" by a password.
Select „999" with the arrow keys and confirm with SET.


Service Code
999
↑
SET
↓

Password for service menu

The service menu appears.

Select „„Static load calibration" with the arrow keys and confirm with ENTER.


Service Menu
Baudrate 8N1
Static Load Calib.
Analog Comparison
ECG-Startpulse
NIBP Parameter
↑
ENTER
↓

Service menu control terminal

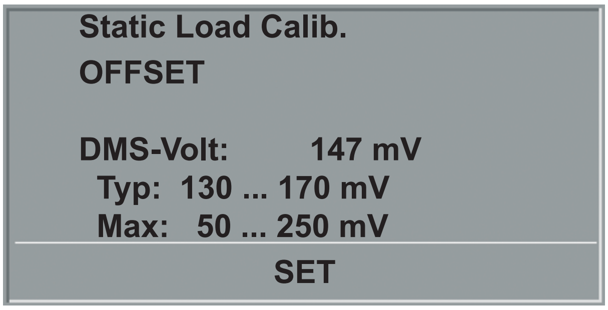
Hint

- *To perform a static load calibration, a 8 kg calibration weight is needed.*

First the offset value (zero value) is defined („OFFSET“).

The displayed strain gauge value should be in the range between 50 und 220 mV (typical 130 -170 mV).

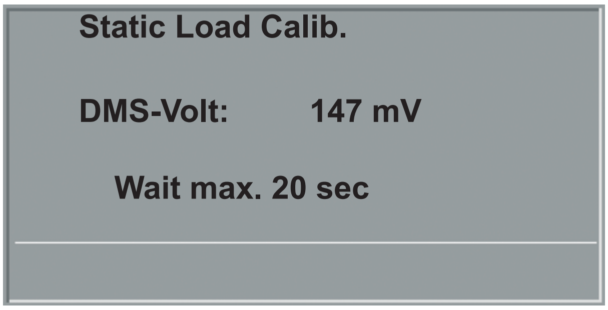
Press [SET] to store the actual OFFSET.



```
Static Load Calib.
OFFSET

DMS-Volt:        147 mV
 Typ:  130 ... 170 mV
 Max:   50 ... 250 mV
            SET
```

Static Load calibration OFFSET

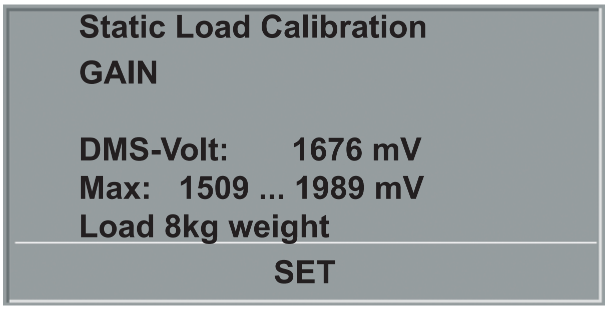
ATTENTION: **The storage of the value needs some seconds!**



```
Static Load Calib.

DMS-Volt:        147 mV

   Wait max. 20 sec
```

Static Load calibration OFFSET – Storage in progress

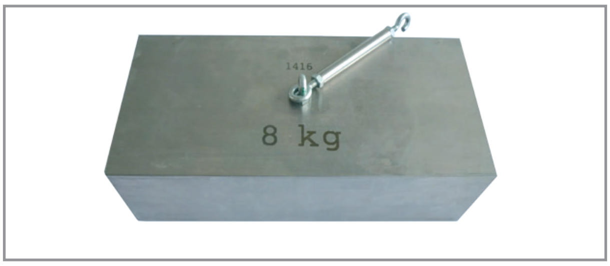
Next step is the calibration of the gain factor for the strain gauge.



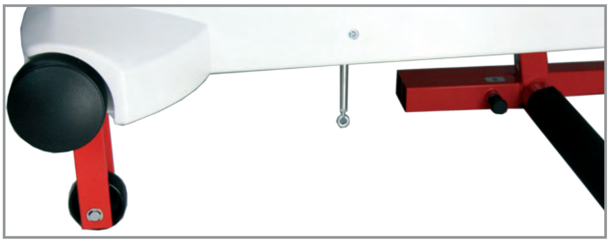
```
Static Load Calibration
GAIN

DMS-Volt:      1676 mV
Max:   1509 ... 1989 mV
Load 8kg weight
            SET
```

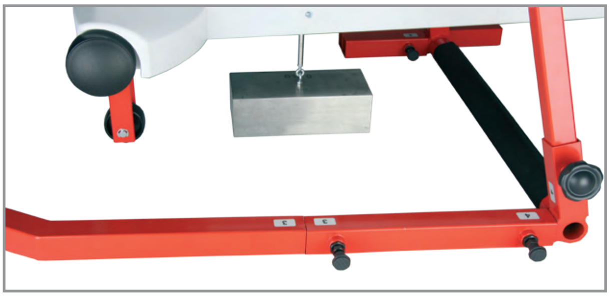
Static load calibration GAIN

Mount the calibration weight (8kg) to the hook at the bottom of the ergometer.



8 kg calibration weight





Calibration weight mounted (8 kg)

The actual strain gauge voltage (DMS-Volt) is shown and should be in the given range.

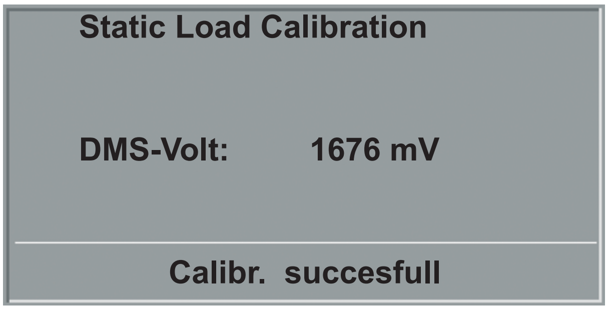
SET stores the GAIN value

ATTENTION: The storage of the value needs some seconds!

The successfull calibration is confirmed.

Remove the calibration weight.

Leave the menu by pressing ESC (top right key).



Static Load Calibration

DMS-Volt: 1676 mV

Calibr. succesfull

Static Load calibration finished

DYNAMIC LOAD CALIBRATION

Connect the load calibrator with the ergometer (observe the detailed hints of the manufacturer).

When a dynamic calibration is performed, the measured actual load values are entered into the ergometer software.

The ergometer calculates the exact characteristic load curve for regulating the eddy current brake.

Hint

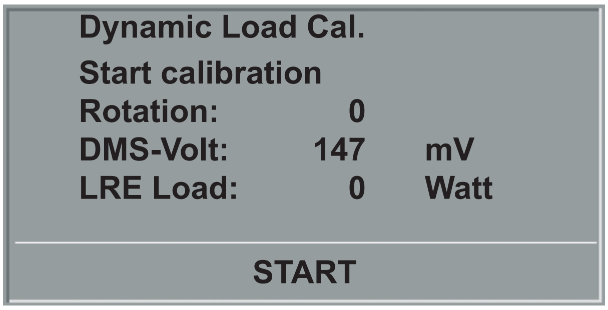
- *To perform the load setting of the ergometer during the dynamic calibration process, a Laptop or PC with terminal program has to be connected to the serial port of the ergometer.*
- *Alternatively the program of the load calibrator unit can be used.*

The following load / rpm combinations have to be measured:

• 50 Watt	at	50 rotations / min
• 50 Watt	at	110 rotations / min
• 400 Watt	at	110 rotations / min

Select „Dynamic load calibration" in the service menu and confirm with ENTER (or SELECT).

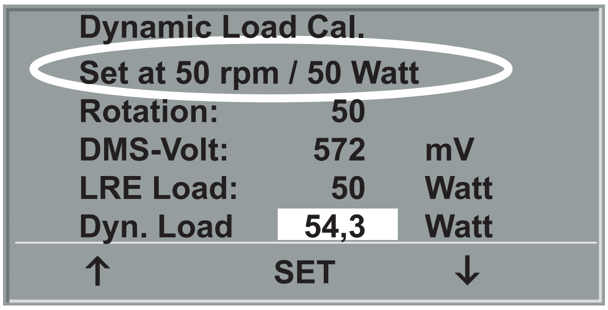
- Start the calibration process with START



```
Dynamic Load Cal.
Start calibration
Rotation:        0
DMS-Volt:      147    mV
LRE Load:        0    Watt
```

DYNAMIC LOAD CALIBRATION – WAITING FOR START

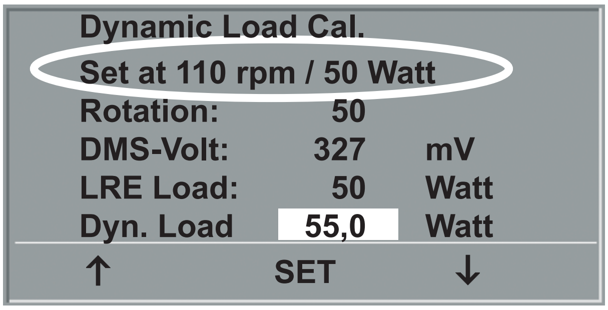
- Set the calibrator unit to 50 rpm
- Set the ergometer to 50 Watt (via PC interface)
- Wait approx. 20 seconds, until the load display is stable
- By using the arrow keys, input the actual value of the calibrator (54, 3 Watt) at the ergometer.
- Store the value with SET.



```
Dynamic Load Cal.
Set at 50 rpm / 50 Watt
Rotation:       50
DMS-Volt:      572    mV
LRE Load:       50    Watt
Dyn. Load     54,3    Watt
```

DYNAMIC LOAD CALIBRATION – 50 WATT AT 50 RPM

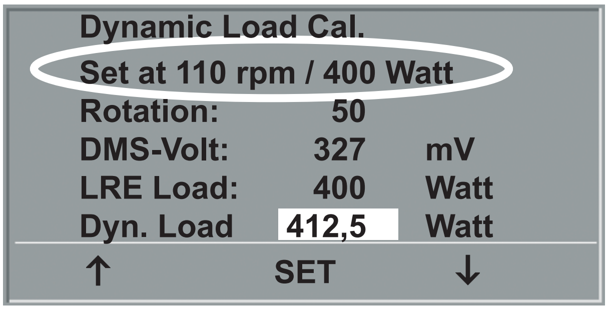
- Set the calibrator unit to 110 rpm.
- Wait approx. 20 seconds, until the load display is stable
- By using the arrow keys, input the actual value of the calibrator (e.g. 55,0 Watt) at the ergometer.
- Store the value with SET.



```
Dynamic Load Cal.
Set at 110 rpm / 50 Watt
Rotation:        50
DMS-Volt:       327    mV
LRE Load:        50    Watt
Dyn. Load      55,0    Watt
↑              SET        ↓
```

DYNAMIC LOAD CALIBRATION – 50 WATT AT 110 RPM

- Set the ergometer to 400 Watt (via PC interface)
- Wait approx. 20 seconds, until the load display is stable
- By using the arrow keys, input the actual value of the calibrator (e.g. 412,5 Watt) at the ergometer.
- Store the value with SET.

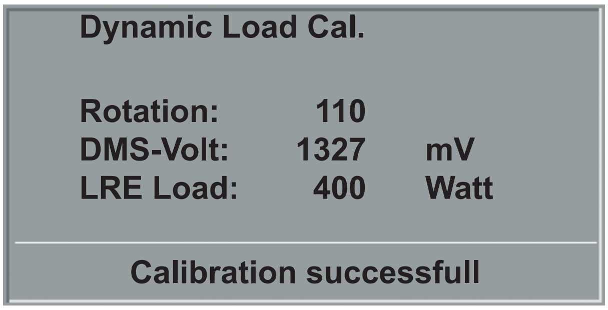


```
Dynamic Load Cal.
Set at 110 rpm / 400 Watt
Rotation:        50
DMS-Volt:       327    mV
LRE Load:       400    Watt
Dyn. Load     412,5    Watt
↑              SET        ↓
```

DYNAMIC LOAD CALIBRATION – 400 WATT AT 110 RPM

The successfull completion of the dynamic load calibration is confirmed.

- Stop the calibration unit.



```
Dynamic Load Cal.

Rotation:       110
DMS-Volt:      1327    mV
LRE Load:       400    Watt

   Calibration successfull
```

DYNAMIC LOAD CALIBRATION – FINISHED

CALIBRATION OF BLOODPRESSURE UNIT

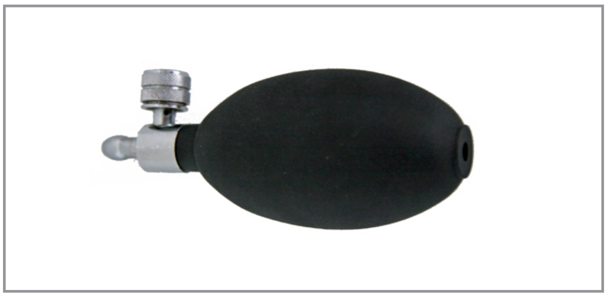
Recommended components:

- Calibrated pressure measuring device (mmHg) (manometer)
- Compensating container with 500 ml volume (min.)
- Handpump
- Adapter for eBike cuff connector
- Connecting tubes with t-adaptors

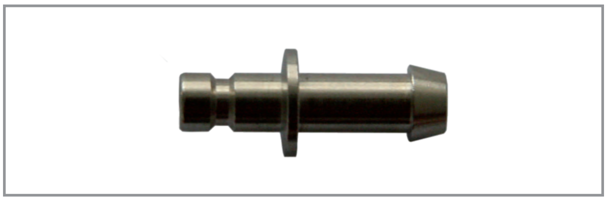
mbar
bar
Pa
kPa
MPa
0.0
mmHg
PSI
Tara
Logg
ON OFF
max
Tara
Set Menu
min
Store Quit
CE
Digital-Druckmeßgerät
Digital Pressure Meter

CALIBRATED PRESSURE MEASURING DEVICE (MMHG)

COMPENSATING CONTAINER (EXAMPLE)

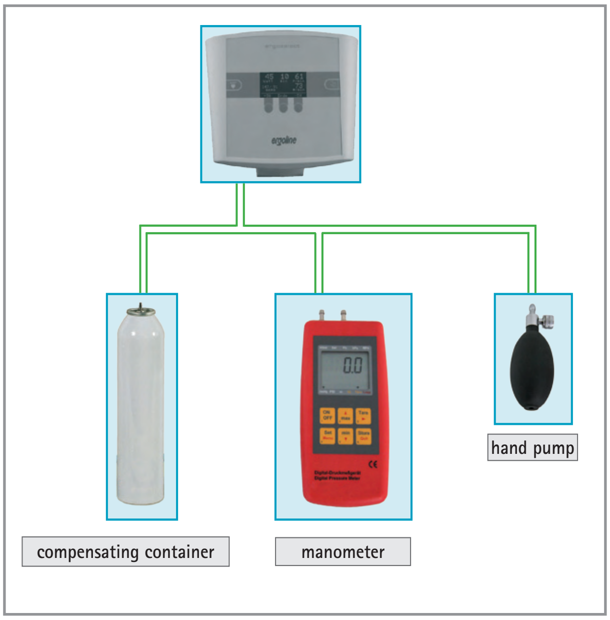


HAND PUMP



ADAPTER FOR EBIKE CUFF CONNECTOR

All the different components are connected with tubes (one pressure system) and connected to the cuff connector of the ergometer control terminal (use cuff adaptor).



Calibration setup NIBP

NIBP Test

This function is used to check the internal pressure system (pressure sensor, closeness, leakage etc.).

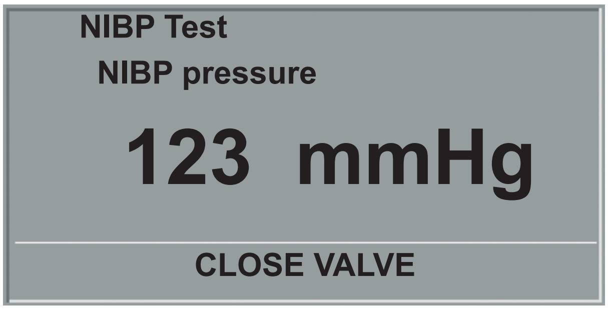
Select „NIBP Test“ in the service menu and confirm with ENTER (or SELECT).

Using the hand pump, apply a fixed pressure to the system

The actual pressure value is displayed.

Compare the displayed ergometer value with the value of the manometer.

The maximum allowed deviation is +/- 3mmHg.


NIBP Test

NIBP pressure

123 mmHg

CLOSE VALVE

Test of the internal NIBP pressure system

Hint

- *If the applied pressure reaches 320 mmHg, the internal safety valve is opened.*
  Press „Close valve“ (middle soft key) to continue with the NIBP-Test.

NIBP Calibration

This function allows the calibration of the internal pressure measurement system.

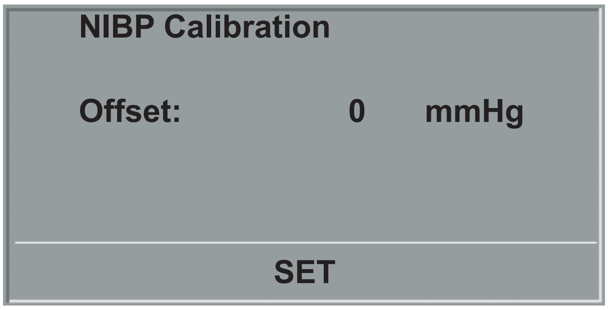
Select „NIBP Calibration“ in the service menu and confirm with ENTER (or SELECT).

Offset calibration

During this calibration step NO pressure should be present in the system.

The cuff connector (self closing) has to be opened (use cuff connector).

- Remove cuff
- Connect the cuff connector with a short tube
- The actual pressure value is displayed.
- Press SET (or START)
- The zero value is stored



NIBP Calibration

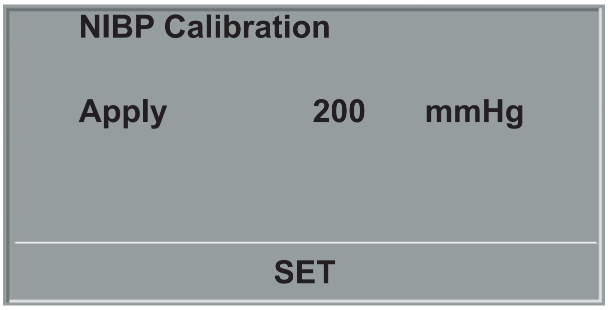
Offset: 0 mmHg

Pressure calibration – offset

Calibration with 200 mmHg

Connect the complete measurement system (hand pump, manometer and compensating container) as described under „NIBP test“.

- Using the hand pump, apply a fixed pressure of 200 mmHg to the system (control by the external manometer)
- Wait some seconds until the pressure is stable - correct the pressure if necessary
- Press SET (or START)
- The NIBP calibration is finished



NIBP Calibration

Apply 200 mmHg

Pressure calibration – gain

SOFTWARE UPDATE

To load a new version of the internal software into the eBike II ergometers, a PC or Laptop with USB or a serial port (RS-232) is needed.

To use the ergoemter USB port, a special driver has to be installed on the PC(virtual COM driver).

Hint

- *Always use the latest software version for the appropriate ergometer.*
- *Use only the PC update program included in the software package.*

Copy the complete software package onto the PC and unzip it.

Connect the PC or Laptop with a serial cable or USB cable with the egometer (Port 1 oder USB).

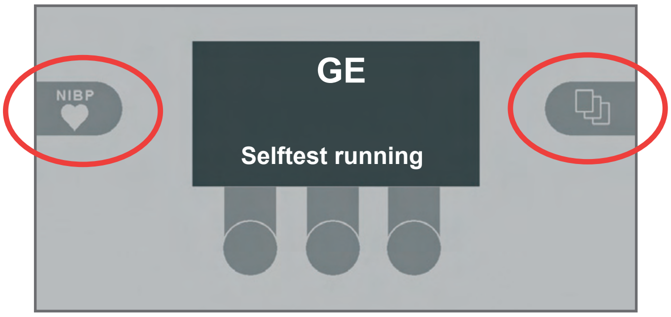
The software update is started in the service menu.

To activate the service menu the ergometer has to be switched off and on again.

As soon as the self test appears on the ergometer display, press the two softkeys

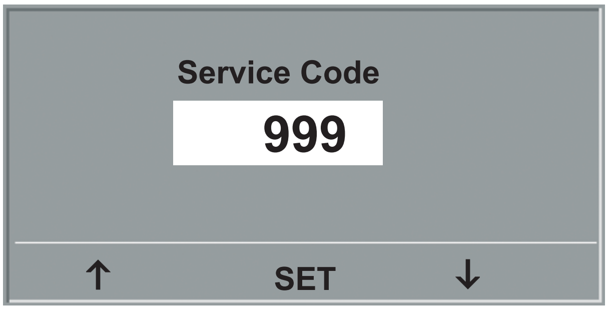
NIBP ♥ ⧉

synchronously and hold.



SERVICE MENU CONTROL TERMINAL

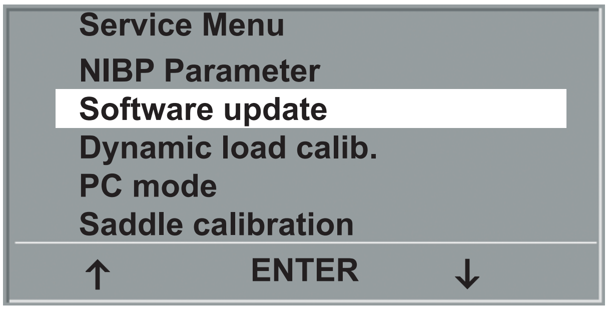
To prevent settings from being changed by chance, the service menu is „protected“ by a password.
Select „999“ with the arrow keys and confirm with SET.


Service Code
999

PASSWORD FOR SERVICE MENU

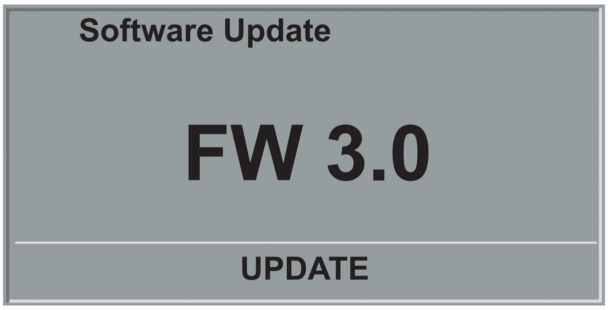
The service menu appears

Select „„Software update" with the arrow keys and confirm with ENTER (or SELECT).


Service Menu
NIBP Parameter
Software update
Dynamic load calib.
PC mode
Saddle calibration
↑
ENTER
↓

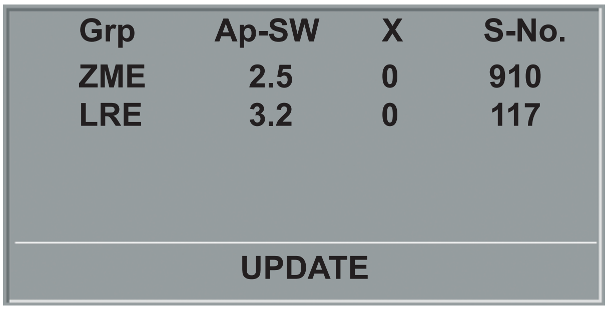
SERVICE MENU CONTROL TERMINAL

The actually installed software version is displayed.


Software Update
FW 3.0
UPDATE

Press the right key to display the installed software versions of the different electronic modules.

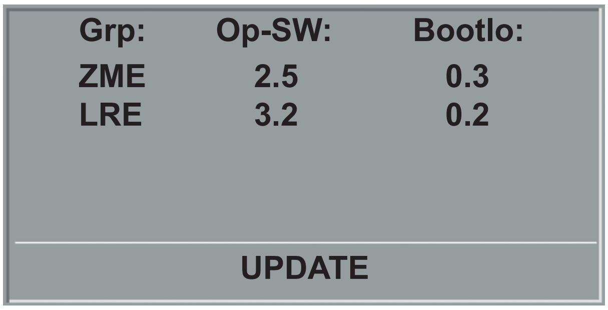
Grp: *name of the module*
Ap-SW: *actually installed version*
(if =0 no connection to module)
X: *XCUT of software-version (always 0)*
S-No.: *serial number of PCB, if electronically available)*



Grp	Ap-SW	X	S-No.
ZME	2.5	0	910
LRE	3.2	0	117

Press the right key again to display the installed bootloader versions of the different electronic modules.

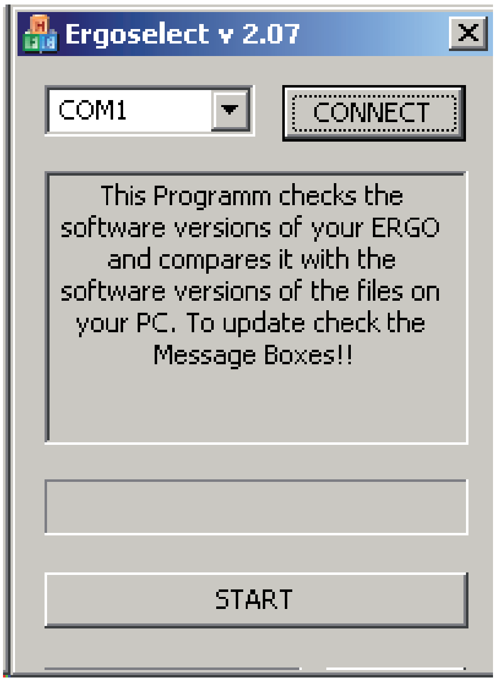
Grp: *name of the module*
Op-SW: *required software version*
(has to be equal to the Ap-SW in previous display)
BootLo: *actual bootloader version of PCB*



Grp:	Op-SW:	Bootlo:
ZME	2.5	0.3
LRE	3.2	0.2

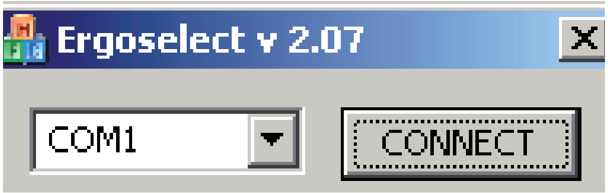
Start the software update by pressing „UPDATE“

Start the PC- update program ergoselect.exe .



This Programm checks the software versions of your ERGO and compares it with the software versions of the files on your PC. To update check the Message Boxes!!

Adjust the serial (or virtual) COM-Port used for the connection with the ergometer.

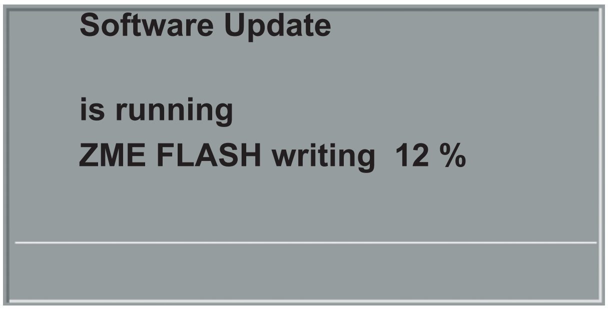


Press CONNECT to establish the software connection.

As soon as the connection is established, the START button becomes active (- or an error message appears).

Initiate the update by pressing „START“.

the update progress is displayed on the ergometer display and on the PC.



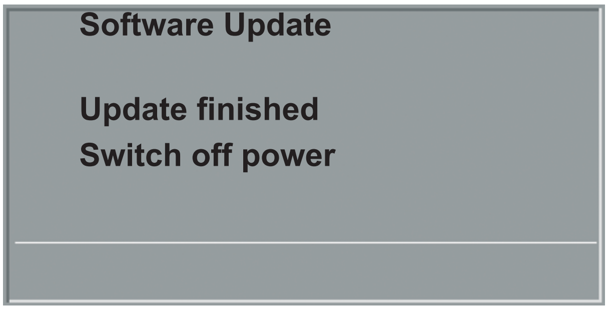
Software Update

is running

ZME FLASH writing 12 %

Software Update in progress

After the update is performed, the ergometer has to be switched off and on again.



Software Update

Update finished

Switch off power

Software Update finished

eBike II basic / comfort

Preventive Maintenance

Hint

- *eBike II basic / comfort is a protection class II device (no connection to protective ground)*
- *preventive maintenance has to be performed every 2 years*

Final checkout procedure / Functional test

- Check the setup for stability, adjust with levelling device if required.

  Expected result: No instability Pass/Fail

- Visually inspect the device:
  - inspect coat of lacquer
  - inspect cables / power cord
  - Check bellows on steering column and saddle

  Expected result: No damage or wear detected Pass/Fail

- Check cranks, pedals and Velcro strips

  Expected result: Cranks, pedals and velcro strips OK Pass/Fail

- eBike basic
  - Check handlebar adjustment (angle)
  - Check saddle height adjustment
  - Check that the clamping levers (saddle (height) and handlebar (angle) adjustment) are tight.
    Grease the threads of the clamping levers (every 2 to 6 months, depending on applicationpurpose).
    (Use of an universal high-performance lubricant such as OKS 470 is recommended)

  eBike comfort
  - Check electrical saddle adjustment: adjust minimum and maximum saddle height;
    then return saddle to mid-level
  - Check correct indication of saddle height display
  - Check handlebar adjustment (angle)
  - Check that the clamping lever for handlebar adjustment (angle) is tight

  Expected result: Adjustments work and levers are tight, all threads properly greased Pass/Fail

- Using the power cord, connect the device to the power line and turn it on with the power switch
  Wait for selftest to end:
  - check LCD (e.g. for error messages)
  - check in the software if the firmware version is OK

  Expected result: Device powers on without errors and FW is OK Pass/Fail

- Check speed indication on LCD and additional speed indication for test subject.
  Check noise level of idling drive unit (e.g. for grinding noises or noise from the bearing)

  Expected result: Speed displayed on both displays and no noticeable noise **Pass/Fail**

- Units with NIBP module:
  - Check cuff tubing and tubing connections, microfon connectors
  - Check blood pressure measurement on test subject at rest
  - Check blood pressure readings on LCD

  Expected result: **BP values are displayed and in proper range** **Pass/Fail**
- Start manual exercise test, change load (e.g. start 50 W, increase 25 W)
  - Check load level and load indication

  Expected result: **Load changes as expected** **Pass/Fail**

- If ergometer is remote controlled from ECG recorder or PC-ECG system:
  - Check connecting cable
  - Check load control via ECG recorder or PC ECG system
  - Check remote start if applicable

  Expected result: **Ergometer can be controlled by external unit** **Pass/Fail**

ELECTRICAL SAFETY

Current leakage test results meet requirements?
Perform electrical safety checks when indicated.
All indicated electrical safety checks require a pass/fail indication for steps performed.
Record the measurement values in your debrief.

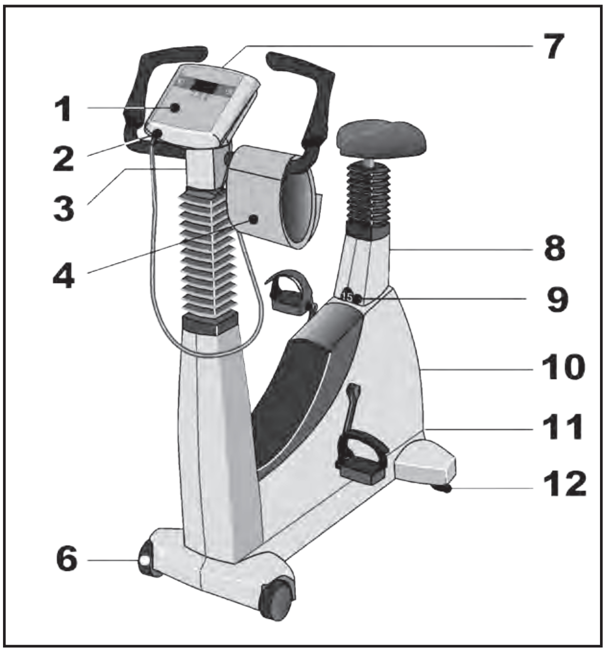
Step		Condition (1)	UUT - ON (2)	Result	Leakage Current limits
Earth Leakage Current					
1.	Forward Polarity	N/A			
2.	Neutral open, Forward Polarity	N/A			
3.	Neutral open, Reverse Polarity	N/A			
4.	Reverse Polarity	N/A			
Enclosure Leakage Current					
1.	Forward Polarity	NC	___________ µA	Pass/Fail	100 µA
2.	Neutral open, Forward Polarity	SFC	___________ µA	Pass/Fail	500 µA
3.	Ground open, Forward Polarity	N/A			
4.	Ground open, Reverse Polarity	N/A			
5.	Neutral open, Reverse Polarity	SFC	___________ µA	Pass/Fail	500 µA
6.	Reverse Polarity	NC	___________ µA	Pass/Fail	100 µA
Patient Leakage Current to Ground (3)					
1.	Forward Polarity	NC	___________ µA	Pass/Fail	100 µA
2.	Neutral open, Forward Polarity	SFC	___________ µA	Pass/Fail	500 µA
3.	Ground open, Forward Polarity	N/A			
4.	Ground open, Reverse Polarity	N/A			
5.	Neutral open, Reverse Polarity	SFC	___________ µA	Pass/Fail	500 µA
6.	Reverse Polarity	NC	___________ µA	Pass/Fail	100 µA
Ground Continuity					**Resistance**
1.	AC mains power cord ground prong to exposed metal surface (ground lug)	N/A			

(1) NC = Normal Condition
SFC = Single Fault Condition
N/A = Not Applicable
(2) UUT = Unit Under Test
(3) Test applies for eBike II basic/comfort with bloodpressure unit only - measuring point is the microfone connector

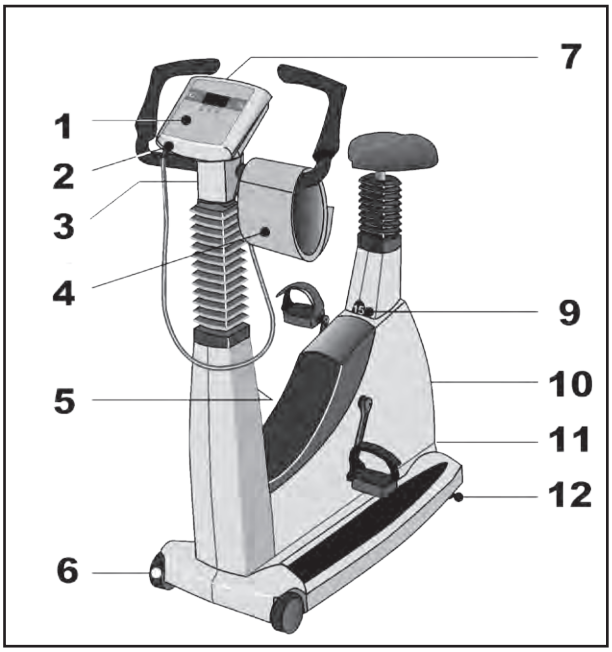
MECHANICAL ASSEMBLY

CONTROLS AND INDICATORS

1	*Control terminal*
2	*Blood pressure cuff connection (option)*
3	*Adjustment of the handlebar angle*
4	*Blood pressure cuff*
5	*Adjustment of the handlebar height (eBike comfort only)*
6	*Castors*
7	*Speed display (RPM) for patient*
8	*Adjustment of the saddle height (eBike 100 only)*
9	*Digital saddle height indication (eBike comfort only)*
10	*Power switch (green button)*
11	*Sockets for power cord and connection cables (underside of ergometer)*
12	*Levelling devices to adjust the ergometer to uneven floors*



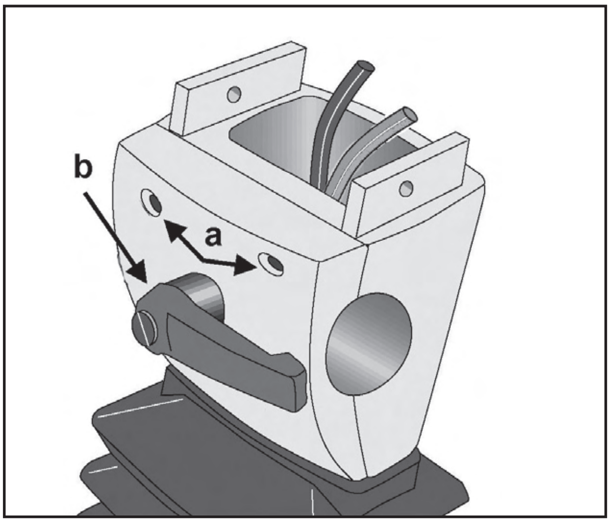
eBIKE BASIC – CONTROLS, CONNECTIONS AND INDICATORS



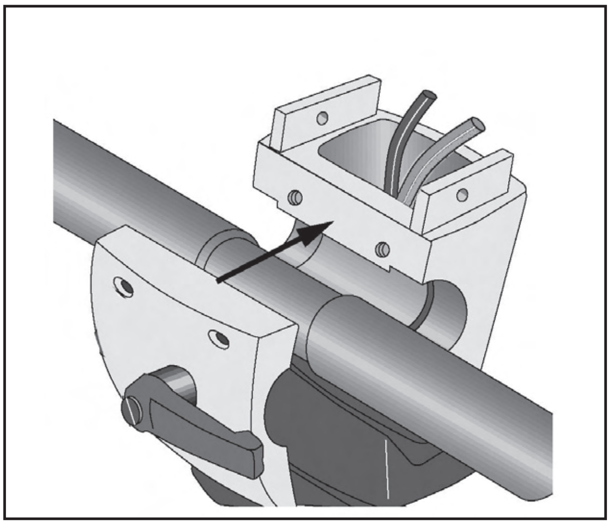
eBIKE COMFORT – CONTROLS, CONNECTIONS AND INDICATORS

MOUNTING THE HANDLEBAR

- Remove the two screws (a) from the clamping plate.
- Holding the clamping plate, turn the clamping lever (b) counterclockwise and remove.
- Take off the clamping plate.
- Install the handlebar (handles downward) and secure with the clamping plate.
- Turn the screws (a) in and tighten moderately.
- Screw in clamping lever (b) by turning it clockwise and tighten moderately.



TAKING OFF THE CLAMPING PLATE



MOUNTING THE HANDLEBAR

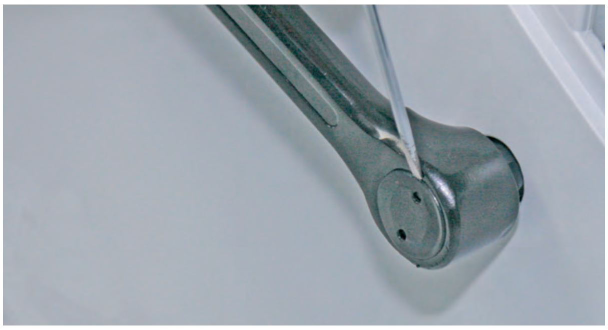
Note

- *When mounting the handlebar, it should first point down until the control terminal has been installed.*
- *Then bring the handlebar to the correct position and secure by tightening the clamping lever and the screws.*
- *At the eBike comfort you can additionally adjust the height of the handlebar to any level by means of a clamping lever.*

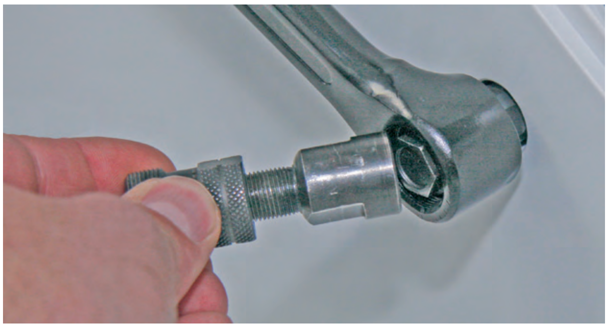
REMOVE HOUSING

DISMOUNT PEDAL CRANKS

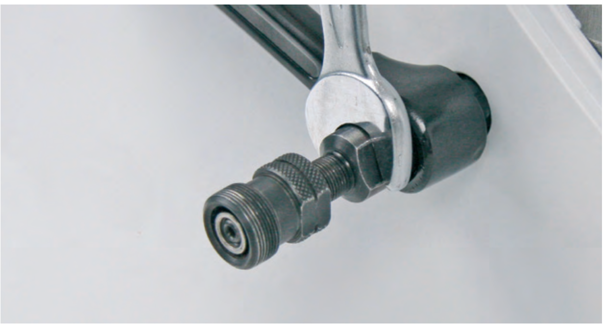
- Carefully lift the protective cover off the crank, using a small flat screw driver.



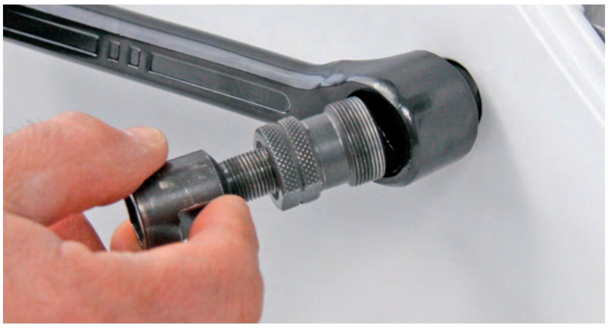
- Plug the extractor (P/N 2005737-001) onto the screw of the crank



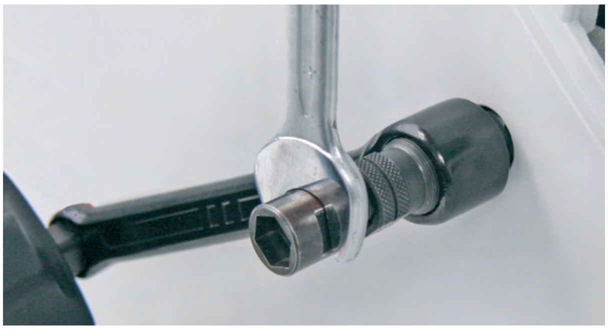
- Lose the screw with an open ended wrench (17 mm)
- Remove the screw and the lock washer



- Turn the extractor and screw it strongly into the winding of the crank screw

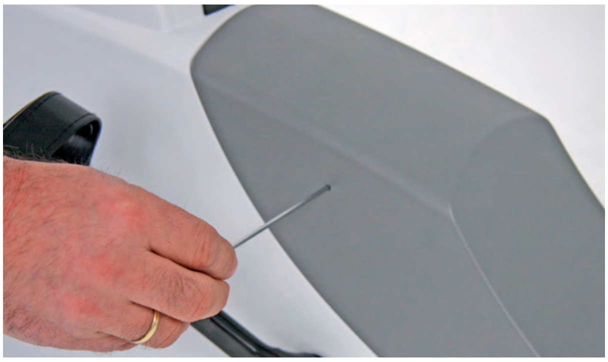


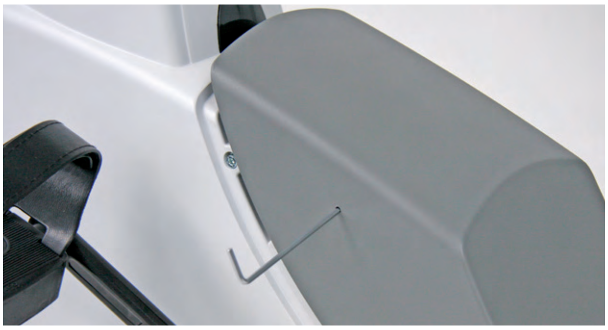
- Use an open ended wrench (17 mm) to remove the crank by screwing the bolt onto the axis.



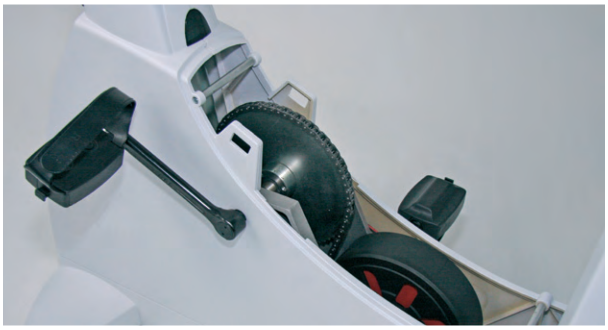
Remove top cover

- Use a small socket wrench or a round pin (3 mm) to unlock the two plastic locks through the small holes (left and ride side of top cover).



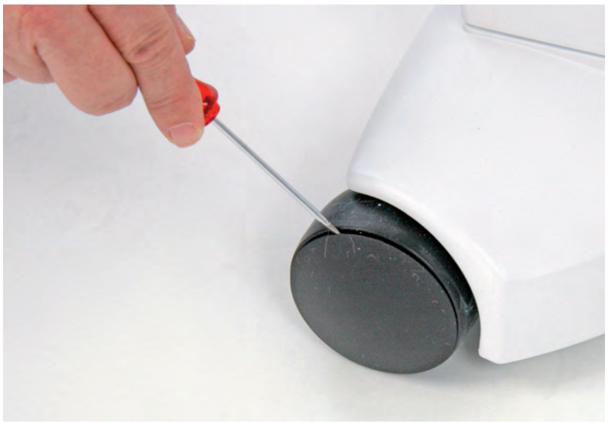


- Remove the top cover

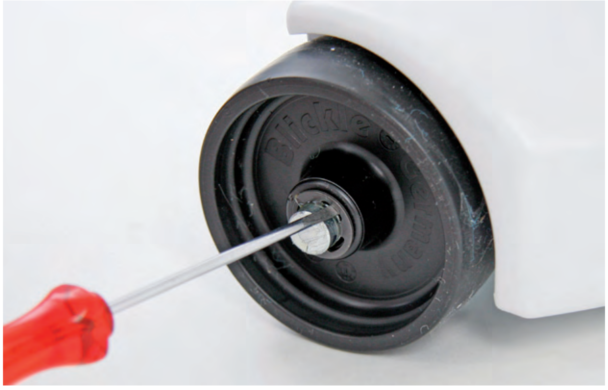


Dismount the wheels

- Carefully remove the cover off the wheels using a small flat screwdriver

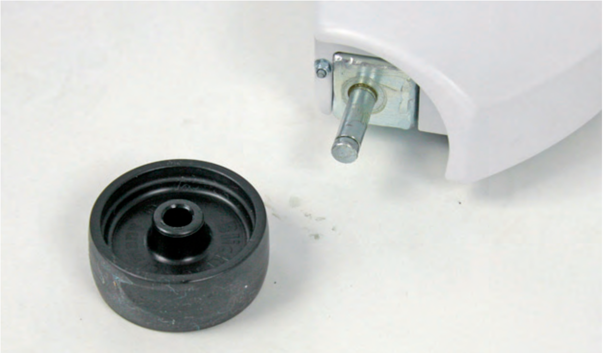


- Remove the snap ring from the axis and pull off the wheel.



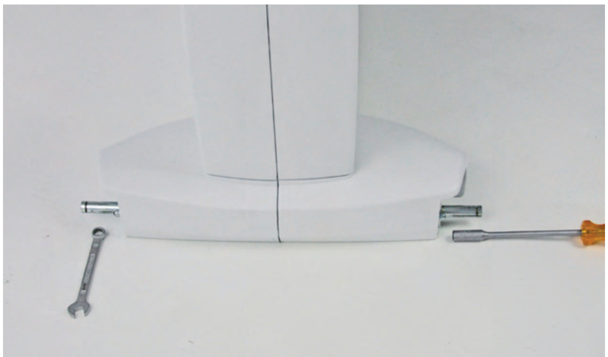
Hint

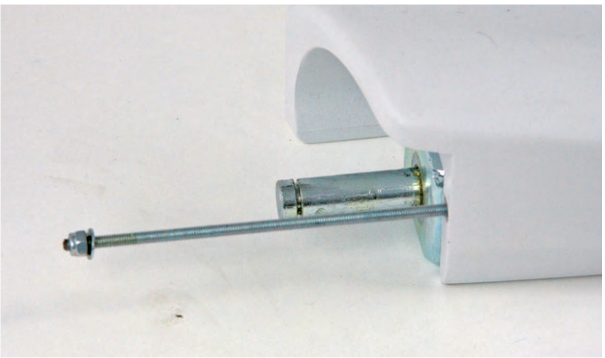
When mounting the wheels again, check that the notch inside the plastic wheel has to be positioned outwards - otherwise the cover will not snap into the wheel.



Threaded bar (front)

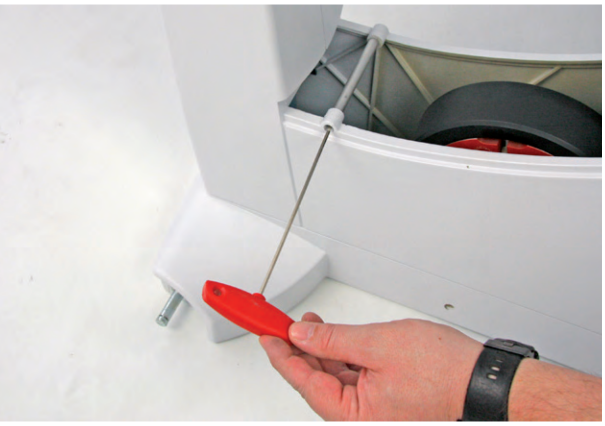
- Loose one of the two cover nuts with a socket wrench and pull the threaded bar out the housing

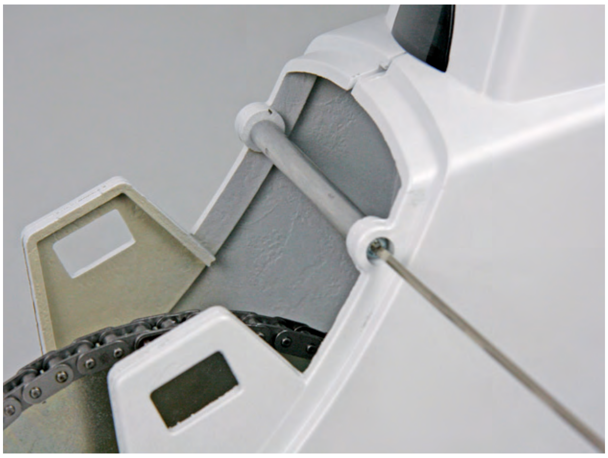




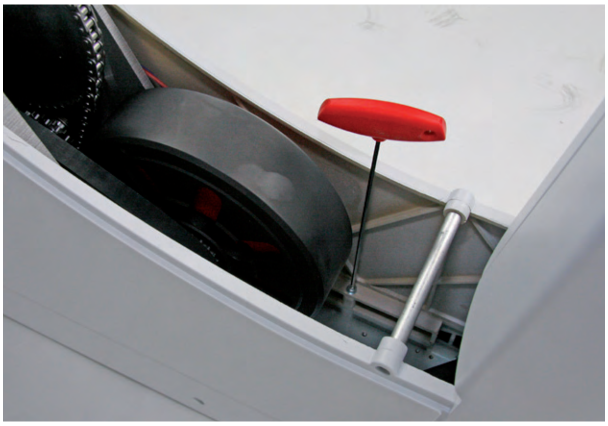
REMOVE SCREWS CONNECTIONS

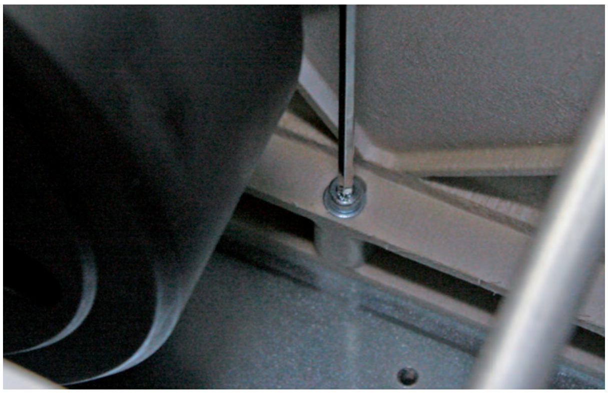
- Loose the screw connections (front and rear) on one side with a socket wrench



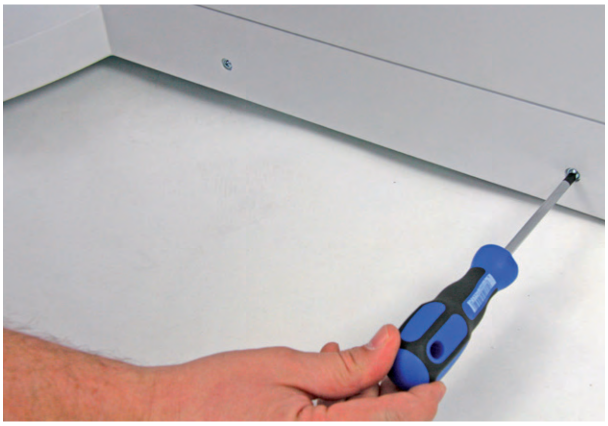


- The housing is screwed to the bottom of the metal frame (on both sides of the eddy current brake). remove these screws with a long socket wrench.

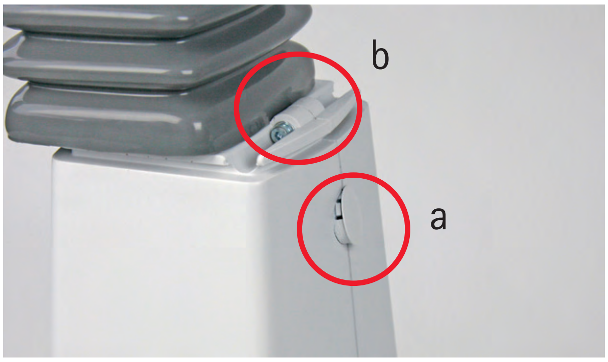




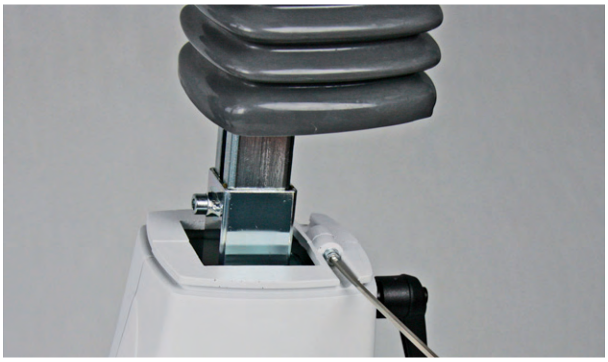
- Remobve the lower screws on both sides of the housing (Philips screw driver).



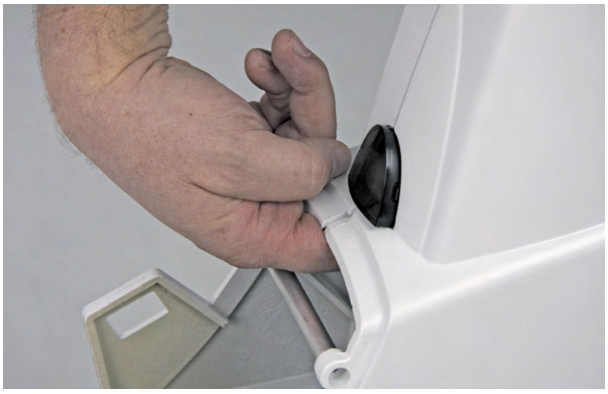
- Remove the protective cover (a) at the top front part of the housing, pull the bellows topwards and loose the Allen key screw (b)..



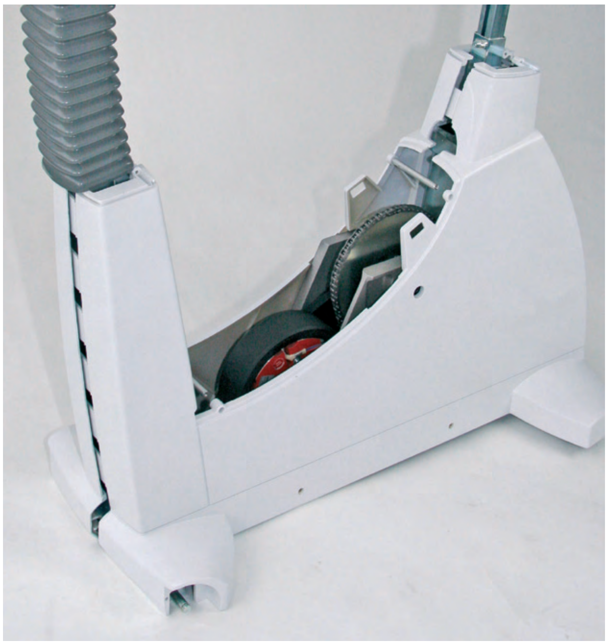
- Pull the bellows at the saddle bar topwards and loose the Allen key screw.



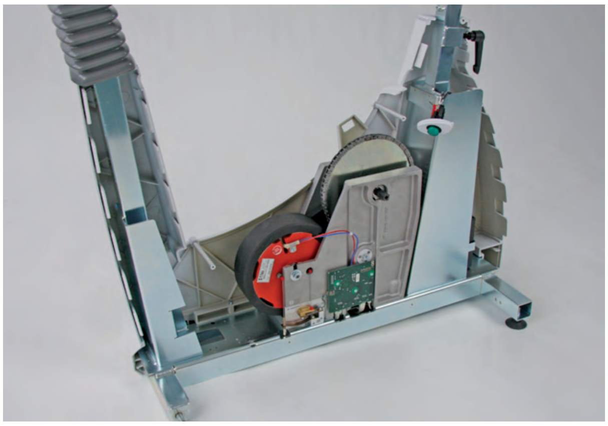
- Press the dark plastic insert to the outside.



- Separate the two housing parts with a flat screwdriver below the front and rear bellows (snap in locks).

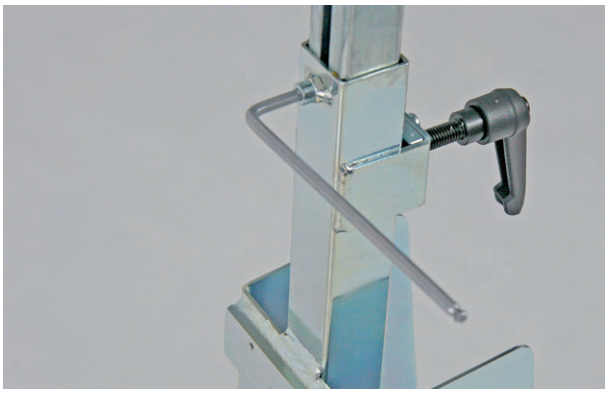


- The housing can be removed.

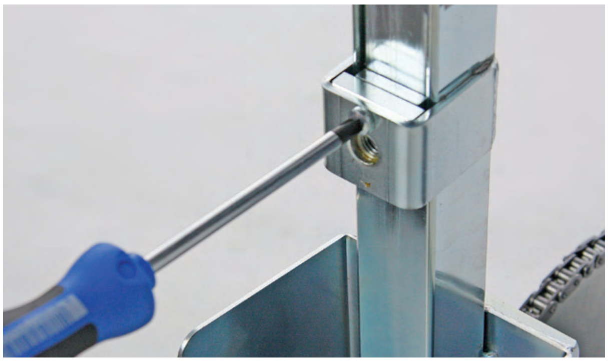


SADDLE PILLAR EXCHANGE (EBIKE BASIC)

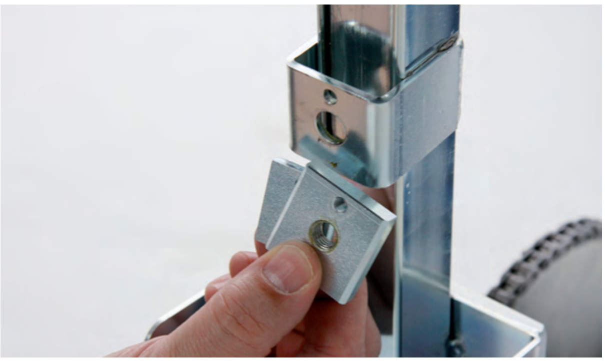
- Remove the housing of the ergometer.
- Loose the limiting screw for the saddle pillar with an Allen key



- Remove the lever
- Loose the Philips screw



- Disassemble the clamping plate and the threaded plate



- The saddle pillar can be pulled out.
- Mounting of the new saddle pilar ist performed in reverse way.

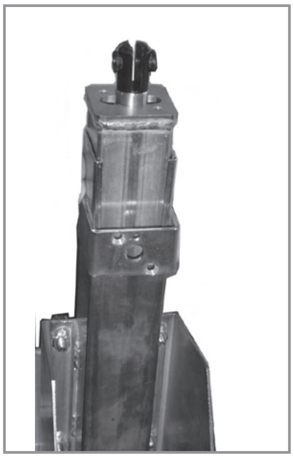
Saddle motor exchange (eBike comfort)

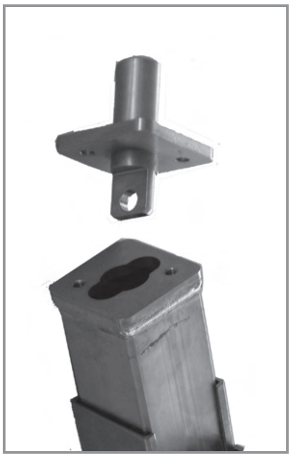
- Remove the housing of the ergometer.

Note

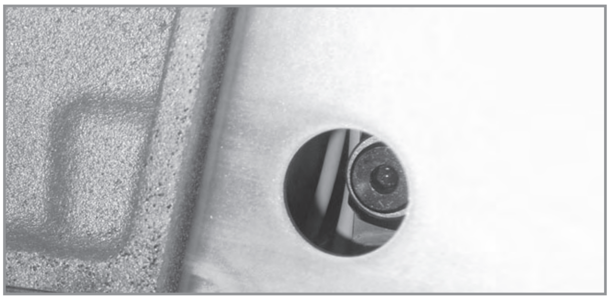
Position the saddle at mid-level before removing the saddle motor

- Disconnect connection cable of the saddle motor from PCB Interface MAE
- Remove the saddle and pull off the bellows.
- Remove saddle host - to do so, unscrew both screws at the top, push down the saddle tube to allow the cylindrical pin to be removed from the saddle shaft.
- Remove clamping plate from saddle tube
- Pull saddle tube off the saddle motor.
- Unscrew the 4 screws of the saddle guide tube and remove the tube





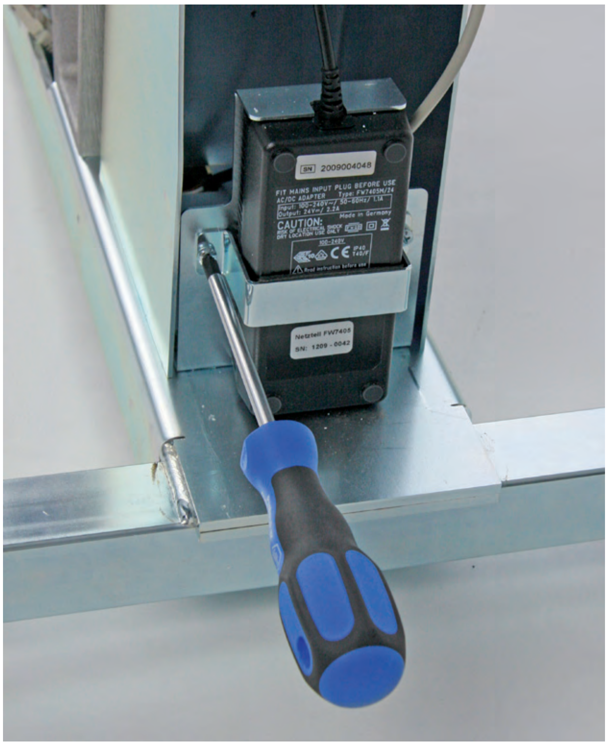
- Loosen bottom fixation of the saddle motor (screw and nut are accessible via a hole at the bottom).



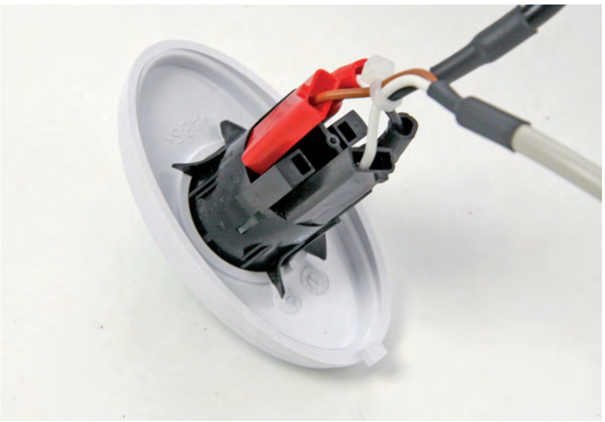
- Remove the saddle motor.
- The new motor is assembled in reverse order.

Power supply unit exchange

The power supply is mounted in the rear of the ergometer
Remove the mounting bracket (2 screws)
Exchange the power supply unit and fix the mounting bracket again.



Exchange the connecting cables at the main switch accordingly
Fix the cables with a cable strap



eBike II L

Preventive Maintenance

Hint

- *eBike II L is a protection class I device (with connection to protective ground)*
- *Suitable common ground terminal:*
  screw head of the protective earth connection between swivelling section and ergometer base
- *preventive maintenance has to be performed every 2 years*

Final checkout procedure / Functional test

- Visually inspect the device
  - Inspect coat of lacquer
  - Inspect cables/power cord
  - Inspect bellows on steering column and saddle
  - Inspect footboard for stability
  - Inspect cuff, tubing and tubing connection
  - Inspect couch adjustment motor for damage
  - Check the setup for stability, lock castor brakes, if required.

  Expected result: **No damage, instability or wear detected** Pass/Fail

- Check rests, cranks, pedals and Velcro strips
  - Check that all clamping levers and star grips are firmly seated
  - Check that cranks, pedals, Velcro strips and pedal shoes are properly fixed.
  - Inspect leg rests and their attachment, if leg rests are installed.
  - Inspect head and arm rests as well as handgrips.
  - Grease the threads of the clamping levers (every 6 months, depending on application purpose).
    (Use of an universal high-performance lubricant such as OKS 470 is recommended)

  Expected result: **All threads properly greased, cranks, rests and pedals OK** Pass/Fail

- Power on
  - Using the power cord, connect the device to the power line and turn it on with the power switch.
  - Wait for self-test to end:
    Check LCD, e.g. for error messages.
  - Check in the software if the firmware version is OK.

  Expected result: **Device powers on without errors and FW is OK** Pass/Fail

- Couch adjustment motor
  - Set motor to both stop positions
  - Change couch position from horizontal (0°) to semi-recumbent (45°) and then back to thehorizontal position (0°)

  Expected result: **Couch position changes to the expected positions** Pass/Fail

- Saddle adjustment motor
  - Check all possible positions by moving the saddle to the top and to the bottom position.
  - Return saddle to the middle position.

Expected result: **saddle position changes to the expected positions** **Pass/Fail**

- Speed and Noise
  - Check speed indication on LCD and additional speed indication for test subject.
  - Check noise level of idling drive unit (e.g., for grinding noises or noise from the bearing).

Expected result: **peed displayed on both displays and no noticeable noise** **Pass/Fail**

- Units with NIBP module:
  - Check cuff tubing and tubing connections, microfon connectors
  - Check blood pressure measurement on test subject at rest
  - Check blood pressure readings on LCD

Expected result: **BP values are displayed and in proper range** **Pass/Fail**

- Start manual exercise test, change load (e.g. start 50 W, increase 25 W)
  - Check load level and load indication

Expected result: **Load changes as expected** **Pass/Fail**

- If ergometer is remote controlled from ECG recorder or PC-ECG system:
  - Check connecting cable
  - Check load control via ECG recorder or PC ECG system
  - Check remote start if applicable

Expected result: **Ergometer can be controlled by external unit** **Pass/Fail**

ELECTRICAL SAFETY

Current leakage test results meet requirements?
Perform electrical safety checks when indicated.
All indicated electrical safety checks require a pass/fail indication for steps performed.
Record the measurement values in your debrief.

Step		Condition (1)	UUT - ON (2)	Result	Leakage Current limits
Earth Leakage Current					
1.	Forward Polarity	NC	___________ µA	Pass/Fail	500 µA
2.	Neutral open, Forward Polarity	SFC	___________ µA	Pass/Fail	1.000 µA
3.	Neutral open, Reverse Polarity	SFC	___________ µA	Pass/Fail	1.000 µA
4.	Reverse Polarity	NC	___________ µA	Pass/Fail	500 µA
Enclosure Leakage Current					
1.	Forward Polarity	NC	___________ µA	Pass/Fail	100 µA
2.	Neutral open, Forward Polarity	SFC	___________ µA	Pass/Fail	500 µA
3.	Ground open, Forward Polarity	SFC	___________ µA	Pass/Fail	500 µA
4.	Ground open, Reverse Polarity	SFC	___________ µA	Pass/Fail	500 µA
5.	Neutral open, Reverse Polarity	SFC	___________ µA	Pass/Fail	500 µA
6.	Reverse Polarity	NC	___________ µA	Pass/Fail	100 µA
Patient Leakage Current to Ground (3)					
1.	Forward Polarity	NC	___________ µA	Pass/Fail	100 µA
2.	Neutral open, Forward Polarity	SFC	___________ µA	Pass/Fail	500 µA
3.	Ground open, Forward Polarity	SFC	___________ µA	Pass/Fail	500 µA
4.	Ground open, Reverse Polarity	SFC	___________ µA	Pass/Fail	500 µA
5.	Neutral open, Reverse Polarity	SFC	___________ µA	Pass/Fail	500 µA
6.	Reverse Polarity	NC	___________ µA	Pass/Fail	100 µA
Ground Continuity					**Resistance**
1.	AC mains power cord ground prong to exposed metal surface (ground lug)	NC	___________ mΩ	Pass/Fail	Less than 200 mΩ

(1) NC = Normal Condition
SFC = Single Fault Condition
N/A = Not Applicable
(2) UUT = Unit Under Test
(3) Test applies for eBike II L with bloodpressure unit only - measuring point is the microfone connector

MECHANICAL ASSEMBLY

CONTROLS AND INDICATORS

1 *Clamping lever for head rest adjustment*

2 *Arm rest for blood pressure measurement (right or left; on systems with automatic blood pressure measurement only)*

3 *Handgrip (mounting and dismounting aid)*

4 *Speed indication for patient*

5 *Control terminal*

6 *Power switch (green button)*

7 *Connectors for power cord and connection cables*

8 *Leg rest (option)*

9 *Castors, locking*

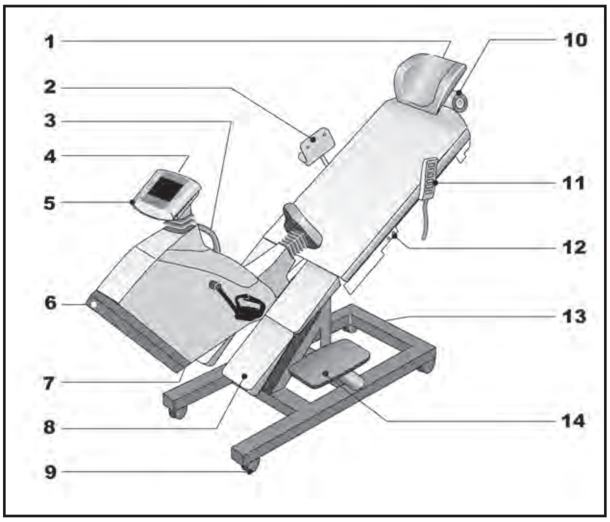
10 *Tissue roll*

11 *Remote control for couch and saddle adjustment*

12 *Connection for blood pressure cuff on either side of the couch (on systems with automatic blood pressure measurement only)*

13 *Type plate*

14 *Footboard*

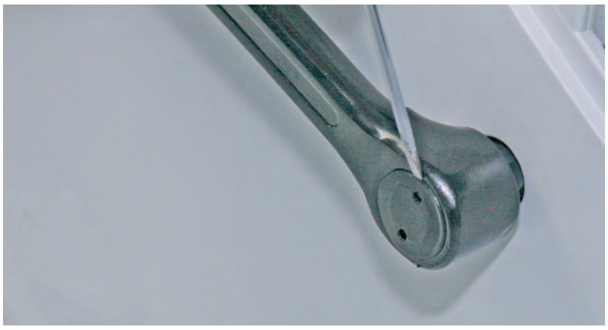


eBIKE L – CONTROLS, CONNECTIONS AND INDICATORS

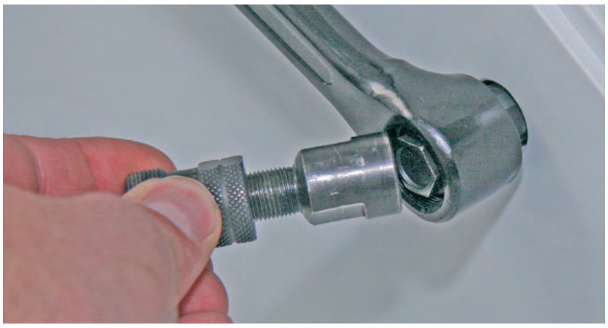
REMOVE HOUSING

DISMOUNT PEDAL CRANKS

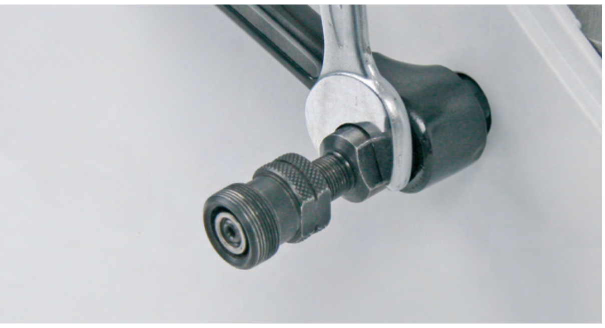
- Carefully lift the protective cover off the crank, using a small flat screw driver.



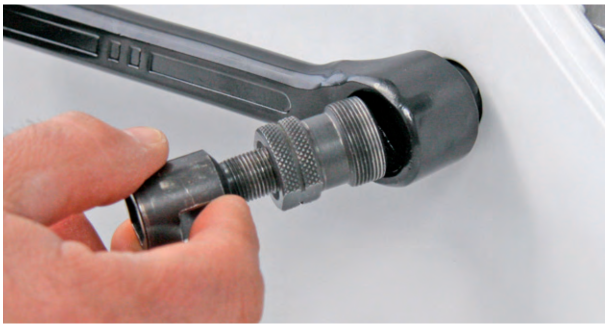
- Plug the extractor (P/N 2005737-001) onto the screw of the crank



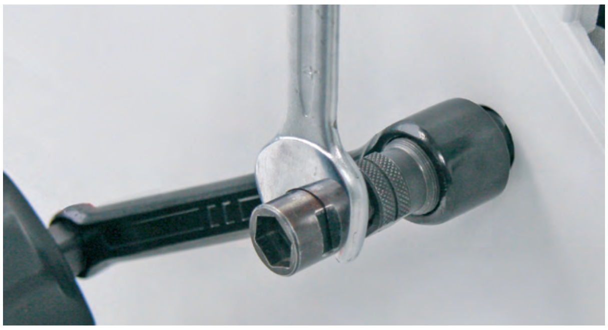
- Loose the screw with an open ended wrench (17 mm)
- Remove the screw and the lock washer



- Turn the extractor and screw it strongly into the winding of the crank screw

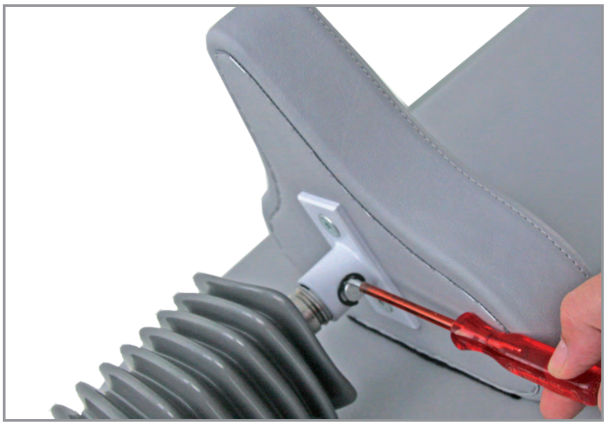


- Use an open ended wrench (17 mm) to remove the crank by screwing the bolt onto the axis.

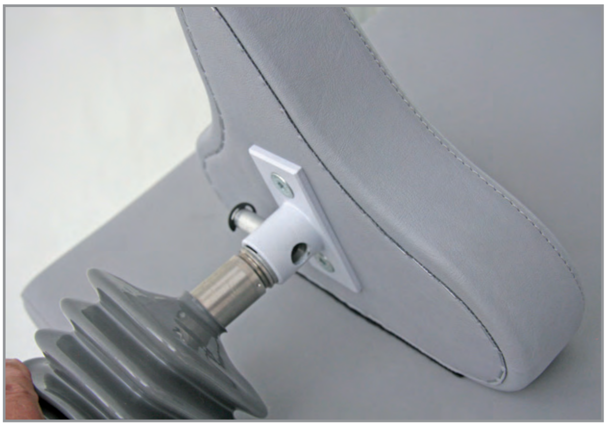


REMOVE SADDLE

- Using the remote control, move the saddle into a low position (approx. 15 cm distance to housing).
- Pull the bellows back and remove the snap ring.



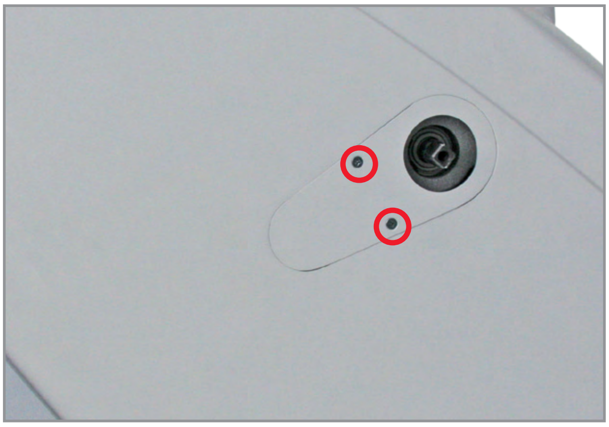
- Pull out the retaining bolt and remove the saddle.

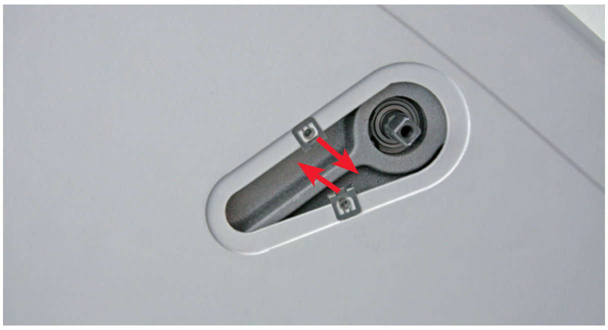


- Remove the bellows.

REMOVE COVER SHEET

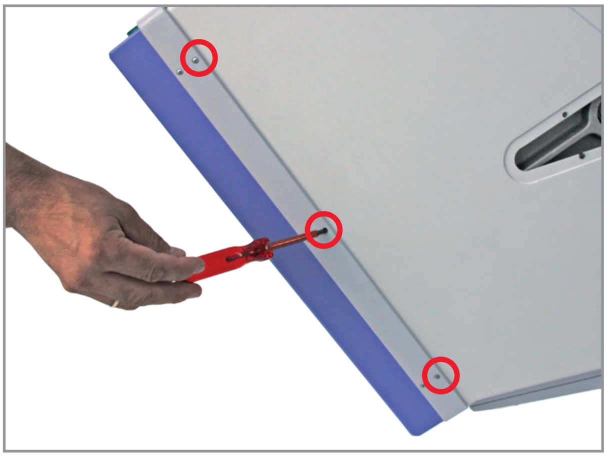
- Loose the screws off the cover sheets and remove the covers on both sides of the housing.
  Remove the clamping nuts.



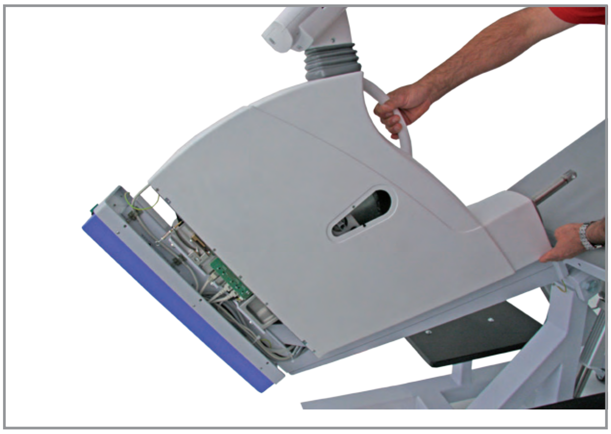


REMOVE THE HOUSING

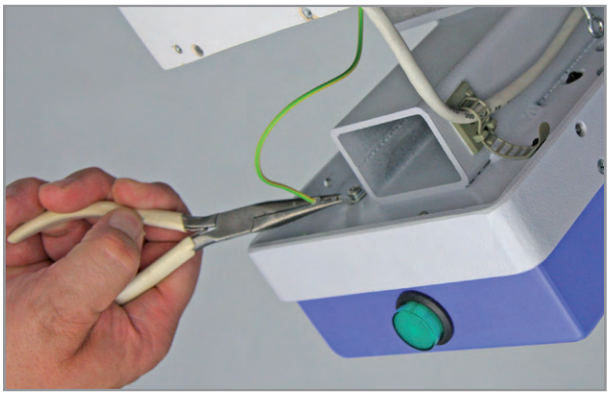
- Loose the retaining screws on both sides (3 each).



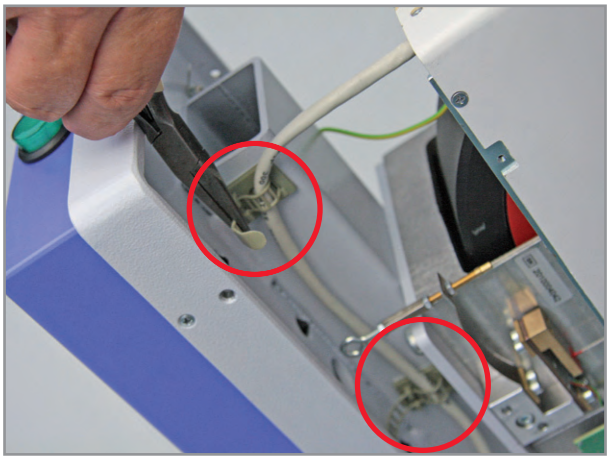
- Pull the housing towards the top of the supine.



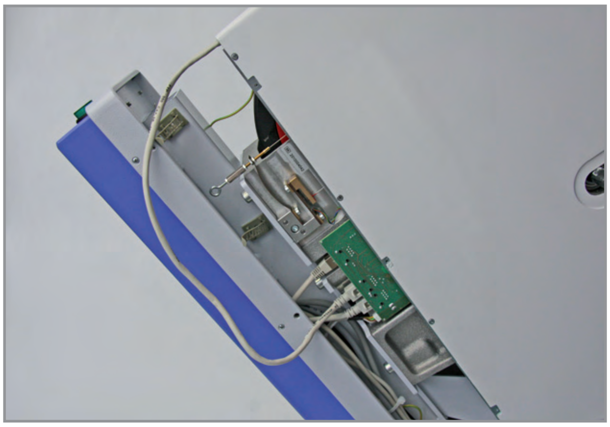
- Disconnect the protective earth connector



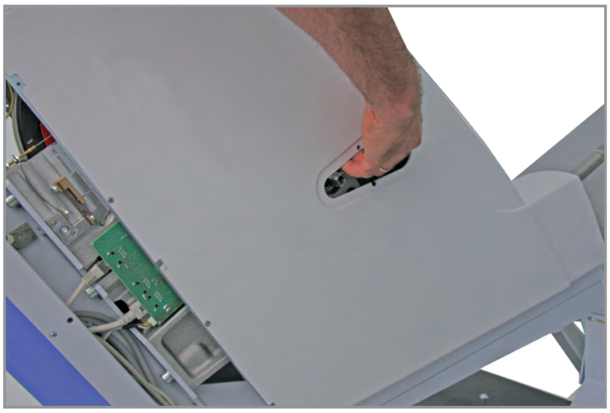
- Open both strain reliefs for the connecting cable (patch cable) ZME <-> LRE



- Connecting cable ZME <-> LRE is released.



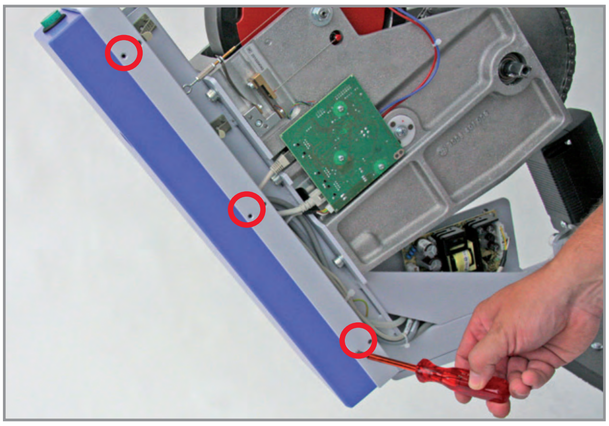
- Pull the housing sidewards to pass the crank axis and remove it.



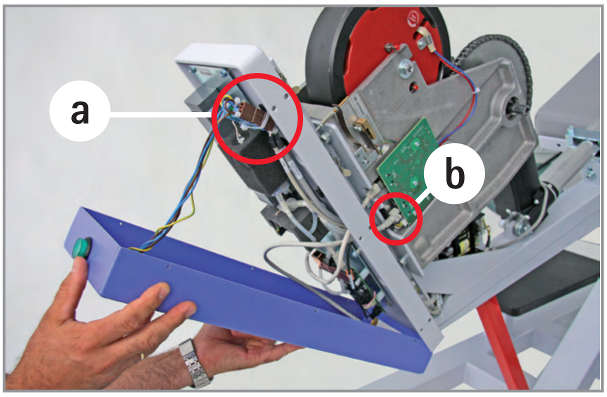
Remove connection box

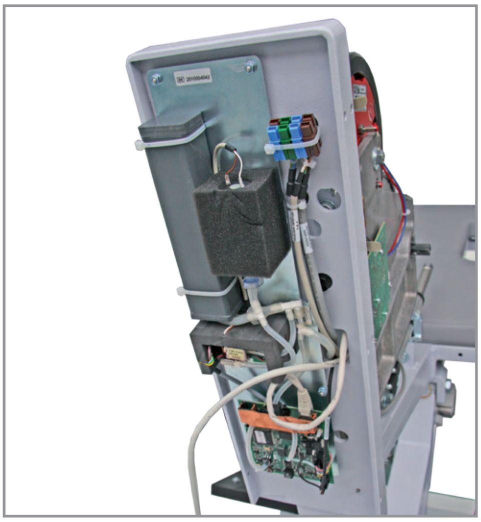
- Remove 6 fixing screws.

  !! Support the connecting box from below !!



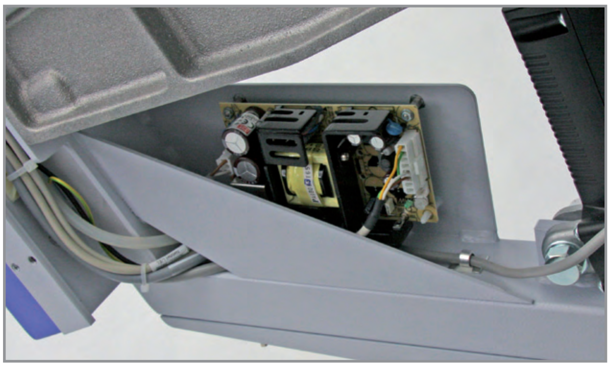
- Disconnect the connecting cable to the mains switch at the modular connector (a).
- Disconnect the connecting cable LRE <-> BKE from the LRE board (CAT-5 Patchkabel)
- The connecting box can be removed.





REPLACING MODULES

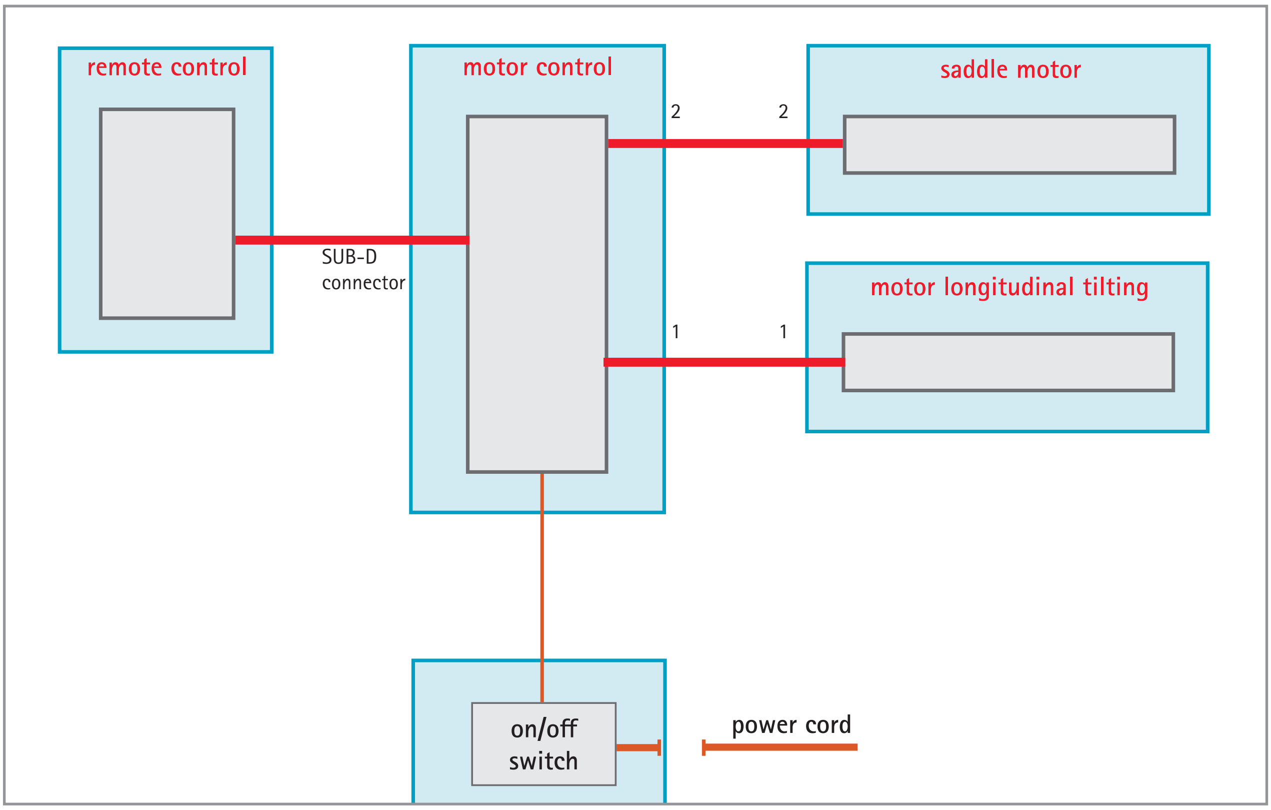
REPLACE POWER SUPPLY



- Switch the device off !!
- Disconnect the power cable !!
- After removing the housing, loose the fixing screws of the power supply.
- Disconnect both connectors an remove the module.
- The new power module is mounted in reverse order.

REPLACE MOTOR CONTROL UNIT

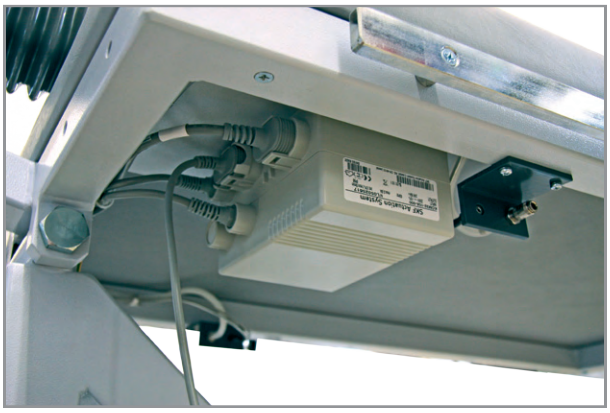
BLOCK DIAGRAM MOTOR CONTROL UNIT


remote control
motor control
saddle motor
motor longitudinal tilting
SUB-D
connector
2
2
1
1
on/off
switch
power cord

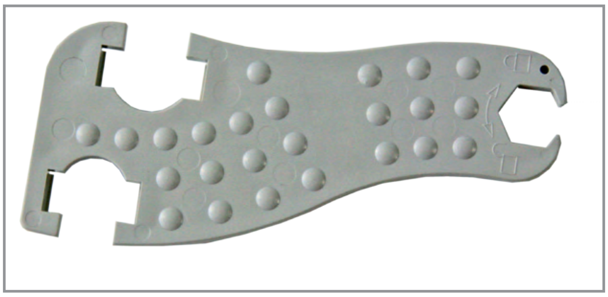
REPLACE MOTOR CONTROL UNIT

Troubleshooting

- Before replacing the motor control unit make sure that the motor is actually defective.
- For this check, use a new hand switch (the hand switch for eBike EL can also be used) and test the motorfunctions.
- If the control unit does not work, it is out of order and must be replaced.
- If it works, the hand switch is defective.



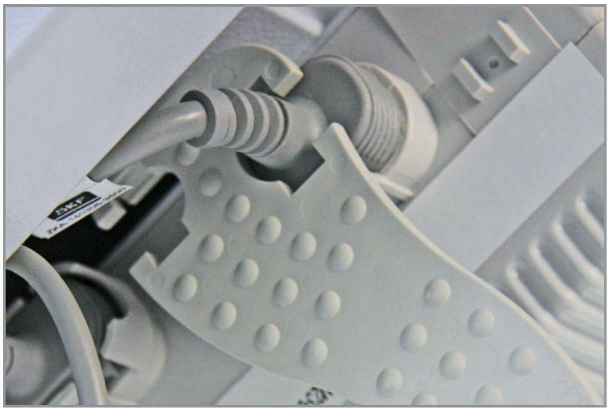
- Disconnect device from mains!
- Disconnect all cables prior the disassembling of the unit, using a suitable fork wrench or the special tool.



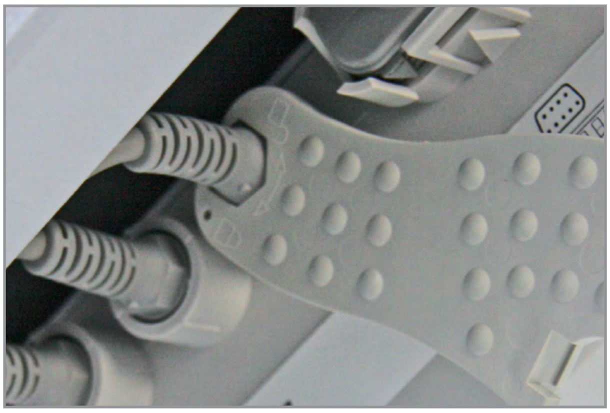
- Place the special tool onto the power connector and unlatch the clamps by pressing the tool downwards.

- Disconnect the power connector.

- Disconnect the remote control cable connector the same way.



- The other side of the tool is used to unlatch the connectors of the motor cables (marked 1, 2 and 3) by turning the connector (bayonet fixing) and pulling out.



- Loose the fixing screws of the motor control unit.

- Assembly of the new control unit is performed in reverse order.

Hint

- *Do not interchange the motor connectors!*
  (Cable and jacks are marked !)

- *Following the exchange of a motor or after any malfunction the control unit has to be initialised!*

  To initialise the control unit, both motors have to be moved in defined end positions::

  - The motor for the supine angle has to be retracted completely (supine horizontal)

  -The saddle motor have to be extended completely.

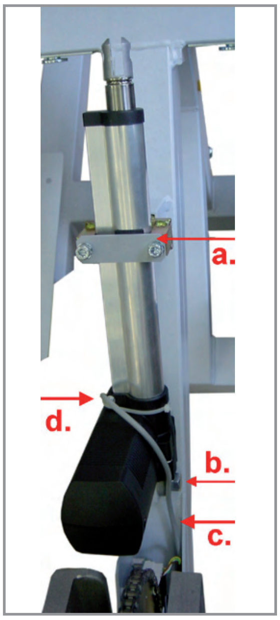
REPLACE SADDLE MOTOR

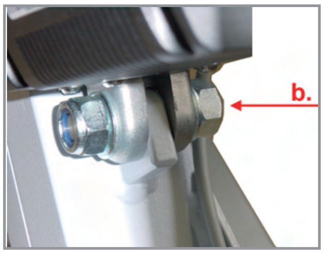
Troubleshooting

- Before replacing the saddle motor make sure that the motor is actually defective.
- For this check, switch the hexagon socket of the saddlemotor from channel 2 to channel 1.
- If the motor does not work, it is out of order and must be replaced.
- If the motor works, the motor control unit or the hand switch is defective.

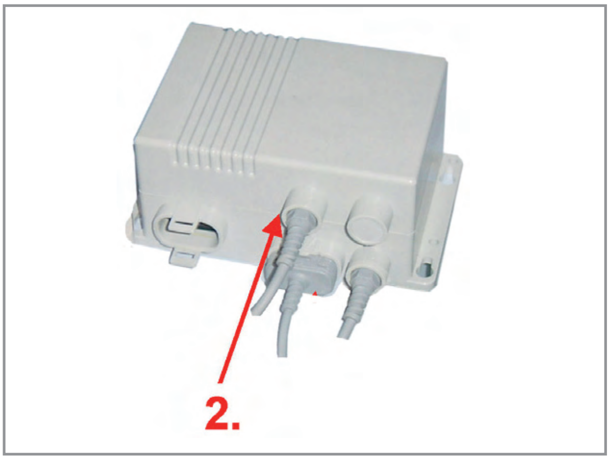
Before you can replace the saddle motor, the connectionbox and the casing must be removed first.Then follow these steps to replace the saddle motor:

- Loosen both hexagon socket screws a. of the saddle guide.
- Remove pin b. with self-locking screw.





- Disconnect plug of cable c. at motor control (connector 2. in illustration).
  To do so, first turn jack plug counterclockwise as far as possible (e.g. using a suitable fork wrench), then pullout the jack plug.
  Open cable tie and pull cable towards the saddlemotor.



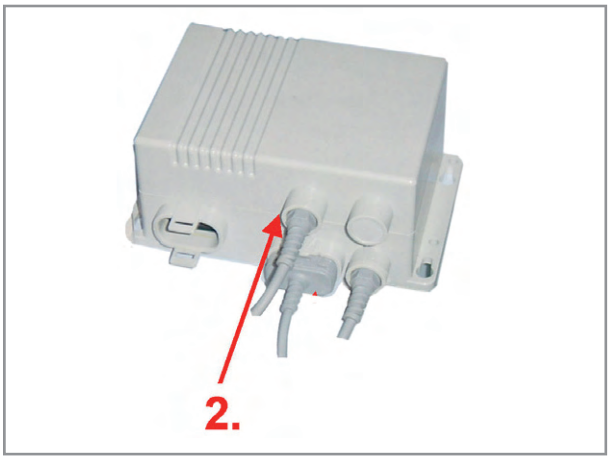
Note

- To facilitate pulling in the new saddle motor cable, attach a draw rope to the cable of the old saddle-motor*)*
- When mounting the new saddle motor, secure the motor control connection cable with a cable tie d, as shown in the illustration.

REPLACE LIFT MOTOR FOR COUCH ADJUSTMENT

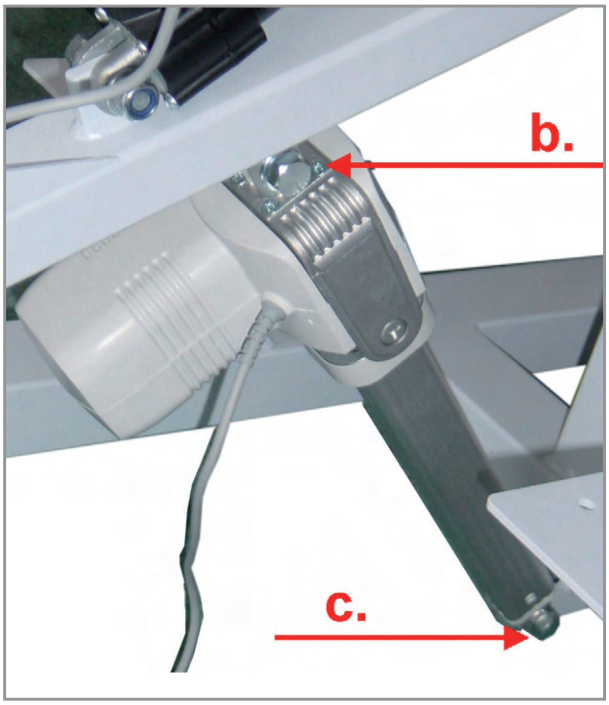
Troubleshooting

- Before replacing the lift motor for couch adjustment make sure that the motor is actually defective.
- For this check, switch the hexagon socket of the liftmotor from channel 2 to channel 1.
- If the motor does not work, it is out of order and must be replaced.
- If the motor works, the motor control unit or the hand switch is defective.



Follow these steps to replace the couch adjustment motor:

- Set motor to the end position where the couch surface is completely horizontal.
- Disconnect system from mains!
- When the lift motor has been removed, the couch surface must be protected against falling down!
- Disconnect connector 2. (see illustration) at motor control. To do so, first turn jack plug counterclockwise as far as possible (e.g. using a suitable fork wrench), then pull out the jackplug.
  Loosen cable tie of the connection cable.
- Remove pins b. + c. with self-locking screw.
- Remove lift motor.



Note:
Reverse the above steps to install the new lift motor. Secure the connection cable to the motor controlunit with cable ties.

REPLACE EXTERNAL SPEED INDICATOR (EBIKE L EXT.)

- Open connection box.
  Disconnect connection cable for external speed indicator from LRE or from BDE (devices with NIBP) board.

- Unscrew the screws securing the external speedindicator and remove the speed indicator by pulling it upward.

eBike II EL

Preventive Maintenance

Hint

- *eBike II EL is a protection class I device (with connection to protective ground)*
- *Suitable common ground terminal:*
  screw head of the protective earth connection
- *preventive maintenance has to be performed every 2 years*

Final checkout procedure / Functional test

- Visually inspect the device
  - Inspect coat of lacquer
  - Inspect cables/power cord
  - Inspect bellows on steering column and saddle
  - Inspect footboard for stability
  - Inspect cuff, tubing and tubing connection
  - Inspect couch adjustment motors for damage
  - Check the setup for stability, lock castor brakes, if required.
  - Inspect outrigger.

  Expected result: **No damage, instability or wear detected** Pass/Fail

- Check rests, cranks, pedals and Velcro strips
  - Check that all clamping levers and star grips are firmly seated
  - Check that cranks, pedals, Velcro strips and pedal shoes are properly fixed.
  - Fold down drop section
  - Inspect leg rests and their attachment, if leg rests are installed.
  - Inspect head and arm rests as well as handgrips.
  - Grease the threads of the clamping levers (every 6 months, depending on application purpose). (Use of an universal high-performance lubricant such as OKS 470 is recommended)

  Expected result: **All threads properly greased, cranks, rests and pedals OK** Pass/Fail

- Power on
  - Using the power cord, connect the device to the power line and turn it on with the power switch.
  - Wait for self-test to end: Check LCD, e.g. for error messages.
  - Check in the software if the firmware version is OK.

  Expected result: **Device powers on without errors and FW is OK** Pass/Fail

- Both couch adjustment motor
  - Set both motors to both stop positions
  - Change couch position from horizontal (0°) to semi-recumbent (45°) and then back to thehorizontal position (0°)
  - Check adjustment range for lateral tilt from the horizontal position (0°)

  Expected result: **Couch position changes to the expected positions** Pass/Fail

- Saddle adjustment motor
  - Check all possible positions by moving the saddle to the top and to the bottom position.
  - Return saddle to the middle position.

  Expected result: **saddle position changes to the expected positions** **Pass/Fail**

- Speed and Noise
  - Check speed indication on LCD and additional speed indication for test subject.
  - Check noise level of idling drive unit (e.g., for grinding noises or noise from the bearing).

  Expected result: **peed displayed on both displays and no noticeable noise** **Pass/Fail**

- Units with NIBP module:
  - Check cuff tubing and tubing connections, microfon connectors
  - Check blood pressure measurement on test subject at rest
  - Check blood pressure readings on LCD

  Expected result: **BP values are displayed and in proper range** **Pass/Fail**

- Start manual exercise test, change load (e.g. start 50 W, increase 25 W)
  - Check load level and load indication

  Expected result: **Load changes as expected** **Pass/Fail**

- If ergometer is remote controlled from ECG recorder or PC-ECG system:
  - Check connecting cable
  - Check load control via ECG recorder or PC ECG system
  - Check remote start if applicable

  Expected result: **Ergometer can be controlled by external unit** **Pass/Fail**

ELECTRICAL SAFETY

Current leakage test results meet requirements?
Perform electrical safety checks when indicated.
All indicated electrical safety checks require a pass/fail indication for steps performed.
Record the measurement values in your debrief.

Step		Condition (1)	UUT - ON (2)	Result	Leakage Current limits
Earth Leakage Current					
1.	Forward Polarity	NC	__________ µA	Pass/Fail	500 µA
2.	Neutral open, Forward Polarity	SFC	__________ µA	Pass/Fail	1.000 µA
3.	Neutral open, Reverse Polarity	SFC	__________ µA	Pass/Fail	1.000 µA
4.	Reverse Polarity	NC	__________ µA	Pass/Fail	500 µA
Enclosure Leakage Current					
1.	Forward Polarity	NC	__________ µA	Pass/Fail	100 µA
2.	Neutral open, Forward Polarity	SFC	__________ µA	Pass/Fail	500 µA
3.	Ground open, Forward Polarity	SFC	__________ µA	Pass/Fail	500 µA
4.	Ground open, Reverse Polarity	SFC	__________ µA	Pass/Fail	500 µA
5.	Neutral open, Reverse Polarity	SFC	__________ µA	Pass/Fail	500 µA
6.	Reverse Polarity	NC	__________ µA	Pass/Fail	100 µA
Patient Leakage Current to Ground (3)					
1.	Forward Polarity	NC	__________ µA	Pass/Fail	100 µA
2.	Neutral open, Forward Polarity	SFC	__________ µA	Pass/Fail	500 µA
3.	Ground open, Forward Polarity	SFC	__________ µA	Pass/Fail	500 µA
4.	Ground open, Reverse Polarity	SFC	__________ µA	Pass/Fail	500 µA
5.	Neutral open, Reverse Polarity	SFC	__________ µA	Pass/Fail	500 µA
6.	Reverse Polarity	NC	__________ µA	Pass/Fail	100 µA
Ground Continuity					**Resistance**
1.	AC mains power cord ground prong to exposed metal surface (ground lug)	NC	__________ mΩ	Pass/Fail	Less than 200 mΩ

(1) NC = Normal Condition
SFC = Single Fault Condition
N/A = Not Applicable
(2) UUT = Unit Under Test
(3) Test applies for eBike II EL with bloodpressure unit only - measuring point is the microfone connector

Mechanical assembly

Controls and Indicators

1 *Clamping lever for head rest adjustment*
Release lever for upholstery drop section (14)

2 *Arm rest for blood pressure measurement (right or left; on systems with automatic blood pressure measurement only)*

3 *Handgrip (mounting and dismounting aid)*

4 *Speed indication for patient*

5 *Control terminal*

6 *Power switch (green button)*

7 *Connectors for power cord and connection cables*

8 *Leg rest (option)*

9 *Castors, locking*

10 *Tissue roll*

11 *Upper handgrip, adjustable*

12 *Remote control for couch and saddle adjustment*

13 *Armpit support, adjustable*

14 *Drop section of upholstery*

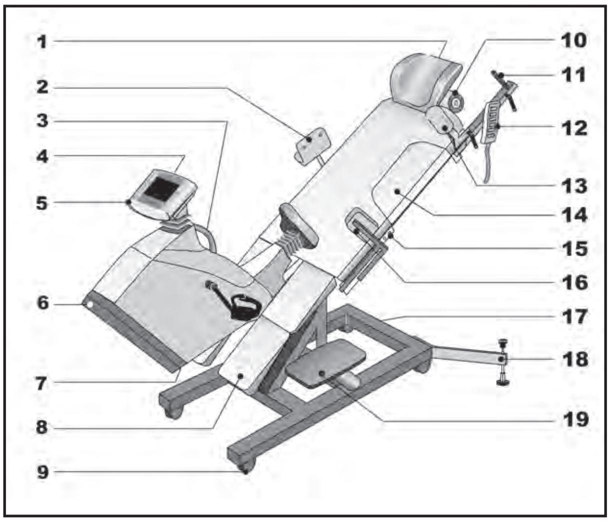
15 *Connection for blood pressure cuff on either side of the couch (on systems with automatic blood pressure measurement only)*

16 *Hip support, adjustable*

17 *Type plate*

18 *Outrigger*

19 *Footboard*

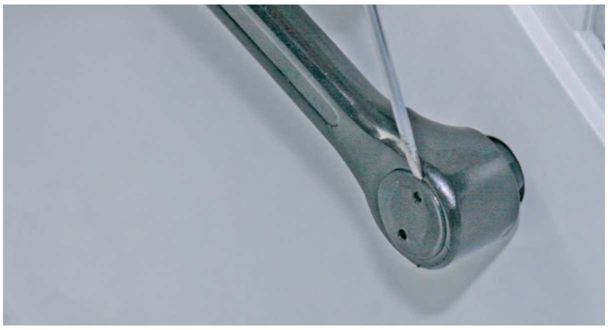


eBike EL – controls, connections and indicators

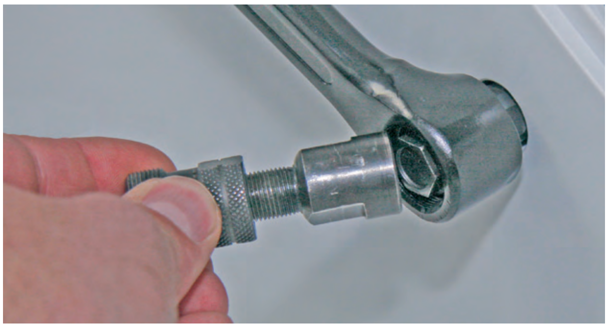
DISASSEMBLY OF HOUSING

DISMOUNT PEDAL CRANKS

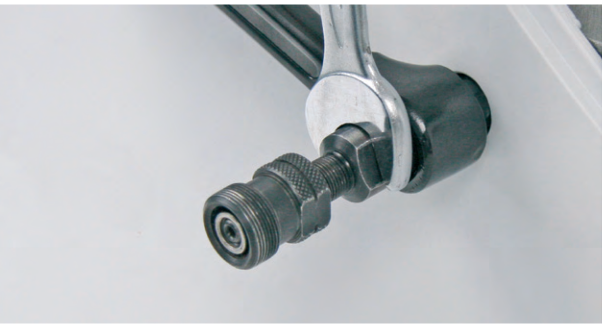
- Carefully lift the protective cover off the crank, using a small flat screw driver.



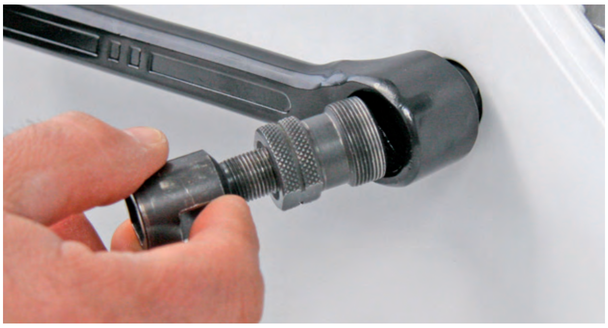
- Plug the extractor (P/N 2005737-001) onto the screw of the crank



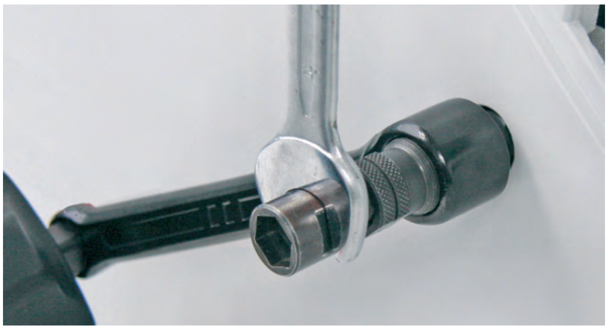
- Loose the screw with an open ended wrench (17 mm)
- Remove the screw and the lock washer



- Turn the extractor and screw it strongly into the winding of the crank screw

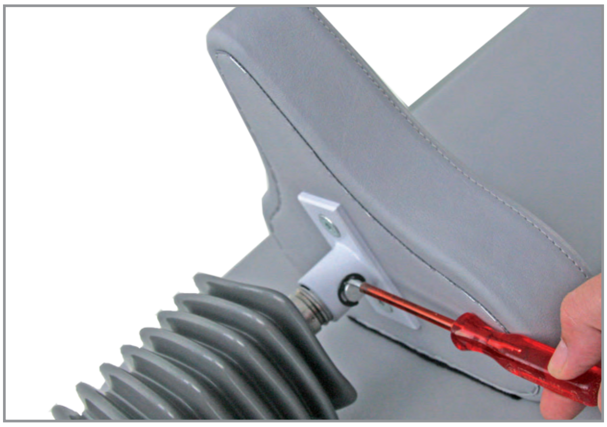


- Use an open ended wrench (17 mm) to remove the crank by screwing the bolt onto the axis.

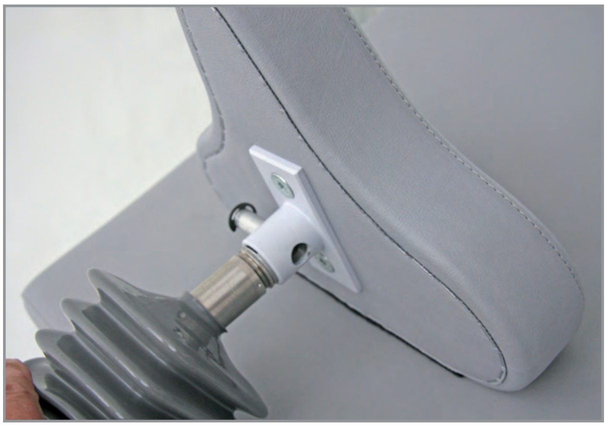


REMOVE SADDLE

- Using the remote control, move the saddle into a low position (approx. 15 cm distance to housing).
- Pull the bellows back and remove the snap ring.



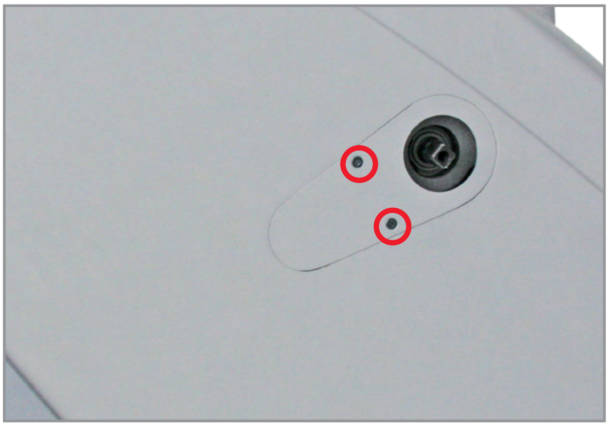
- Pull out the retaining bolt and remove the saddle.

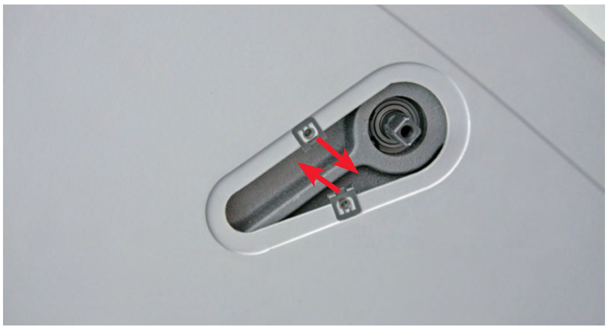


- Remove the bellows.

REMOVE COVER SHEET

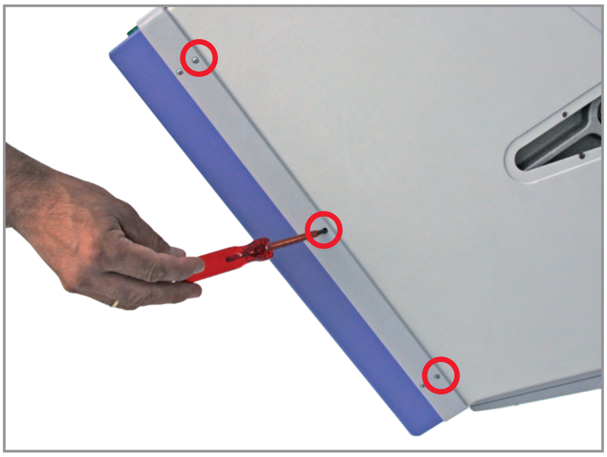
- Loose the screws off the cover sheets and remove the covers on both sides of the housing.
  Remove the clamping nuts.



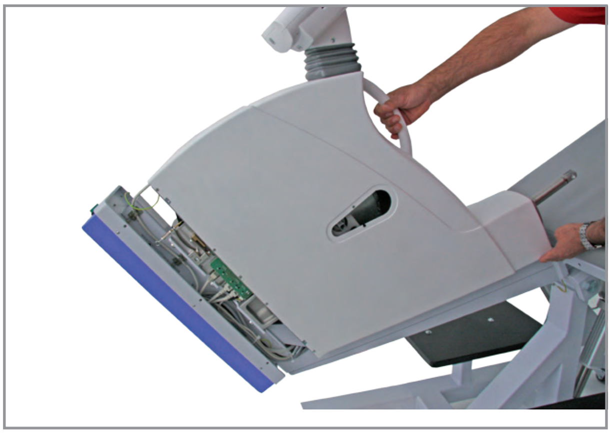


REMOVE THE HOUSING

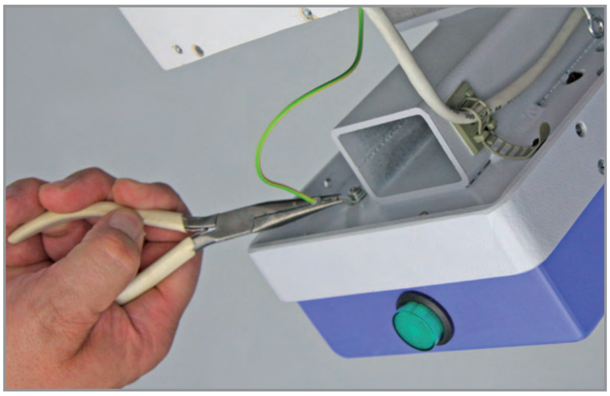
- Loose the retaining screws on both sides (3 each).



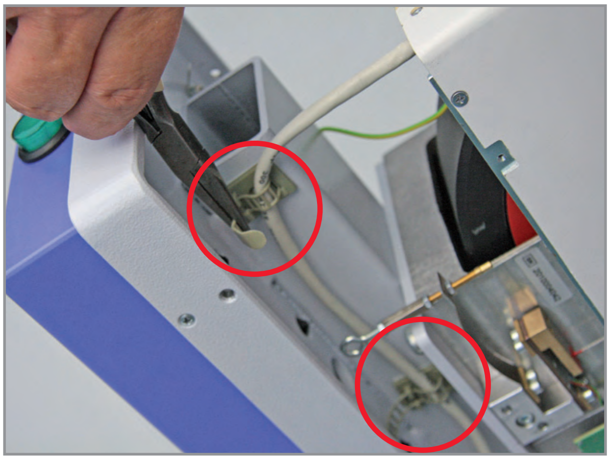
- Pull the housing towards the top of the supine.



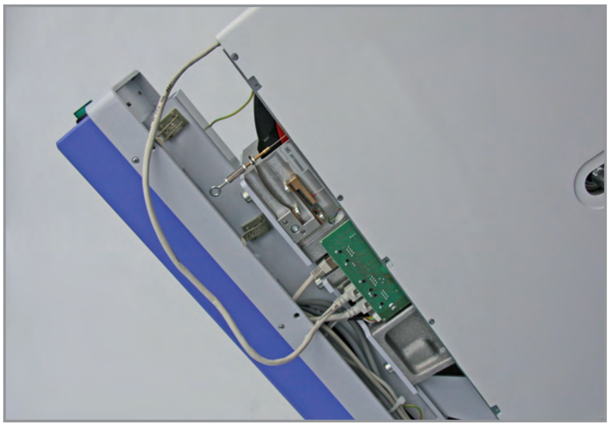
- Disconnect the protective earth connector



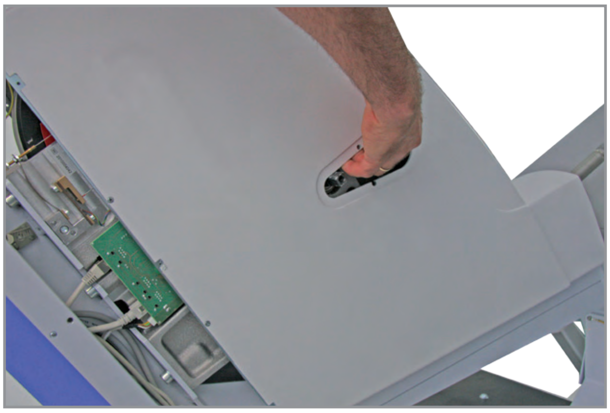
- Open both strain reliefs for the connecting cable (patch cable) ZME <-> LRE



- Connecting cable ZME <-> LRE is released.



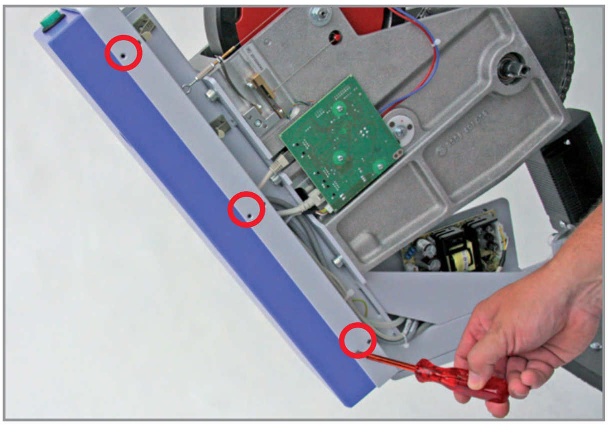
- Pull the housing sidewards to pass the crank axis and remove it.



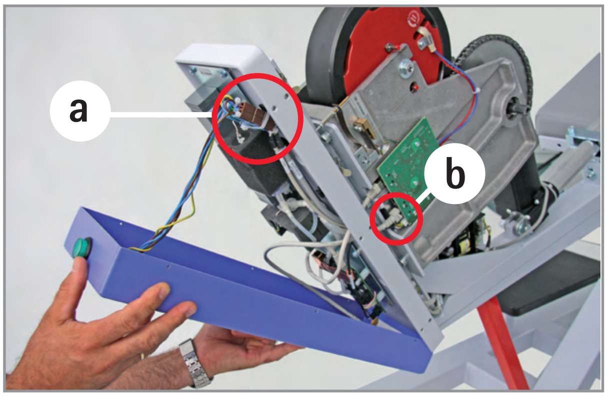
REMOVE CONNECTION BOX

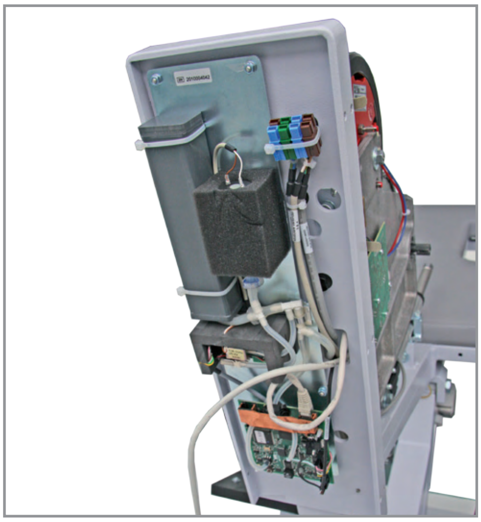
- Remove 6 fixing screws.

  !! Support the connecting box from below !!



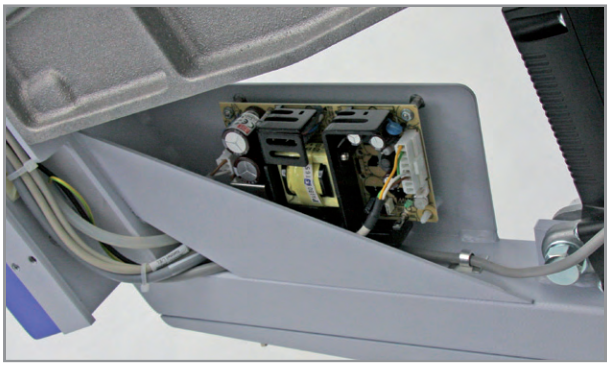
- Disconnect the connecting cable to the mains switch at the modular connector (a).
- Disconnect the connecting cable LRE <-> BKE from the LRE board (CAT-5 Patchkabel)
- The connecting box can be removed.





Replacing modules

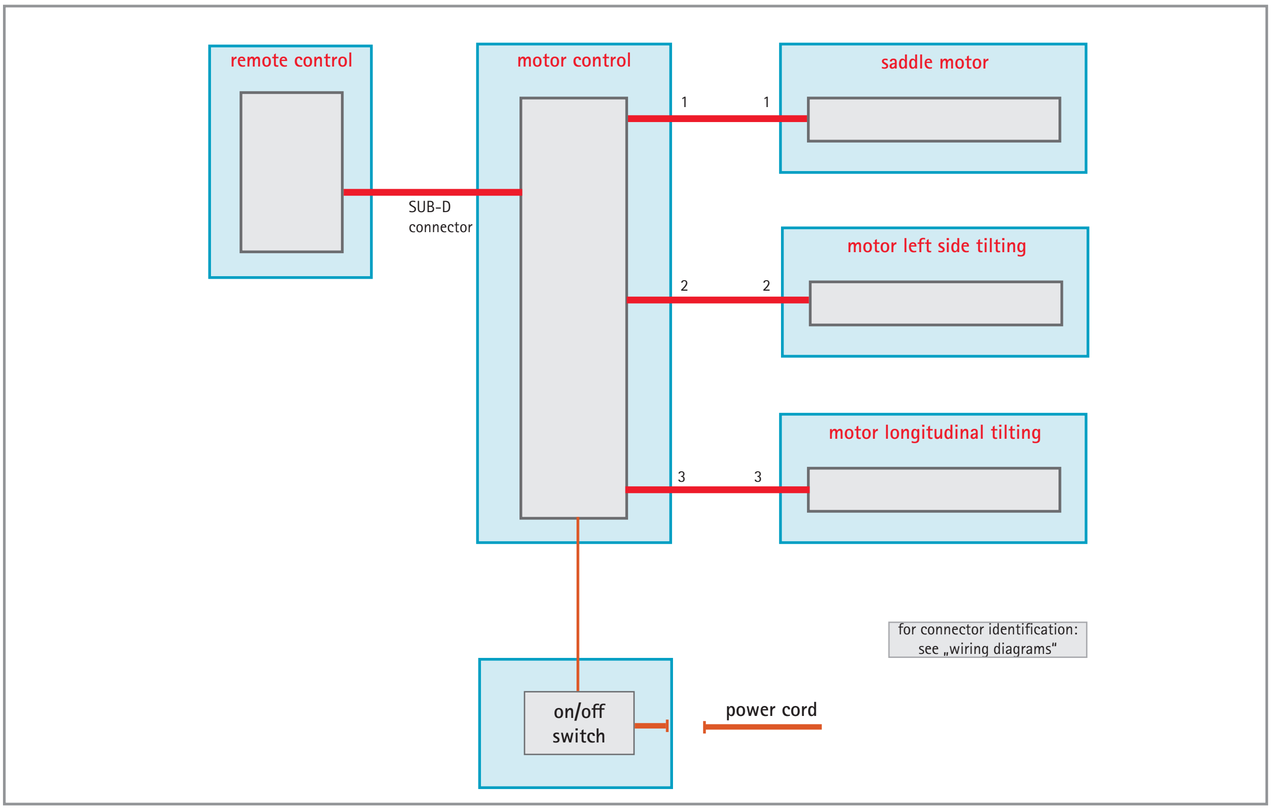
Replace power supply



- Switch the device off !!
- Disconnect the power cable !!
- After removing the housing, loose the fixing screws of the power supply.
- Disconnect both connectors an remove the module.
- The new power module is mounted in reverse order.

EXCHANGE MOTOR CONTROL UNIT

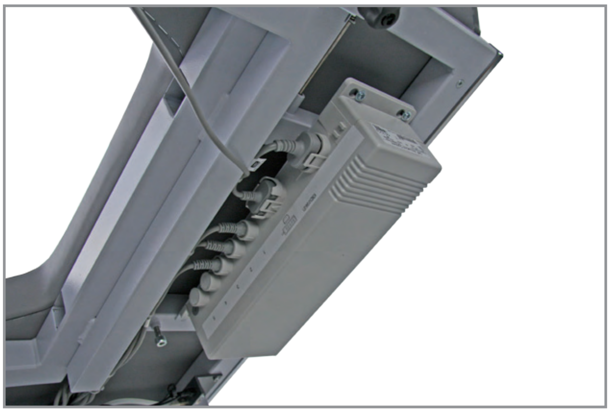
BLOCK DIAGRAM MOTOR CONTROL UNIT


remote control
motor control
saddle motor
1
1
SUB-D
connector
motor left side tilting
2
2
motor longitudinal tilting
3
3
for connector identification:
see „wiring diagrams“
on/off
switch
power cord

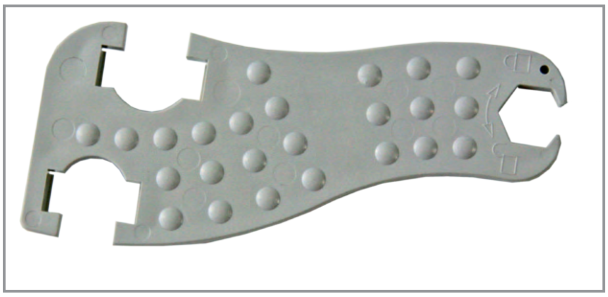
EXCHANGING THE MOTOR CONTROL UNIT

Troubleshooting

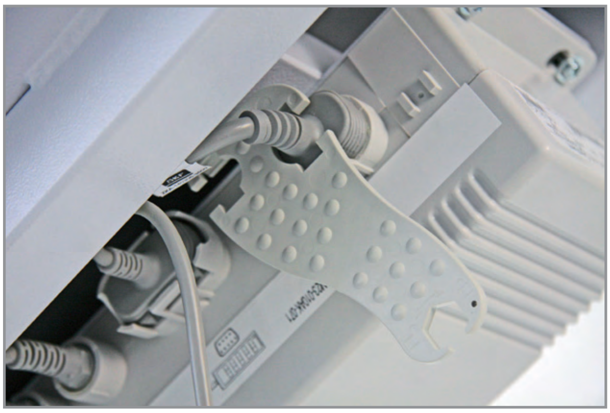
- Before replacing the motor control unit make sure that the motor is actually defective.
- For this check, use a new hand switch for eBike EL and test the motorfunctions.
- If the control unit does not work, it is out of order and must be replaced.
- If it works, the hand switch is defective.



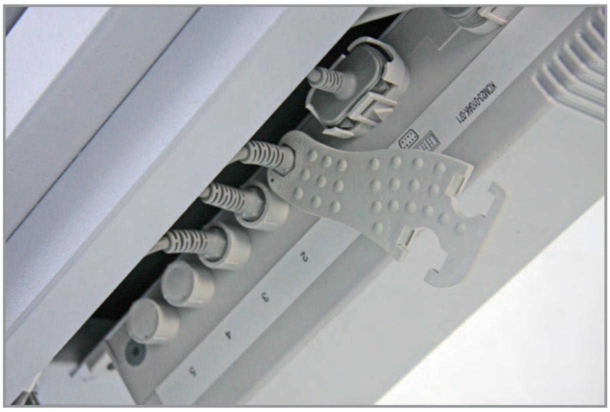
- Disconnect device from mains!
- Disconnect all cables prior the disassembling of the unit, using a suitable fork wrench or the special tool.



- Place the special tool onto the power connector and unlatch the clamps by pressing the tool downwards.
- Disconnect the power connector.
- Disconnect the remote control cable connector the same way.



- The other side of the tool is used to unlatch the connectors of the motor cables (marked 1, 2 and 3) by turning the connector (bayonet fixing) and pulling out.



- Loose the fixing screws of the motor control unit.
- Assembly of the new control unit is performed in reverse order.

Hint

- Do not interchange the motor connectors!
  (Cable and jacks are marked !)
- *Following the exchange of a motor or after any malfunction the control unit has to be initialised!*

  To initialise the control unit, both motors have to be moved in defined end positions::

  - The motor for the supine angle has to be retracted completely (supine horizontal)

  -- The motor for the supine angle has to be extended completely (supine 45° to the side)

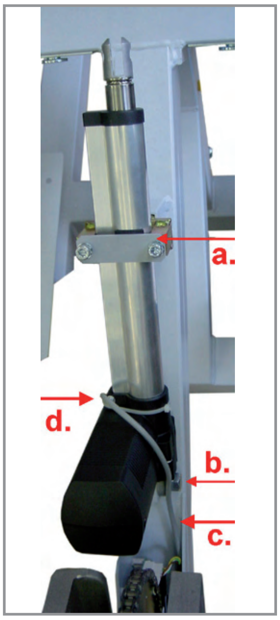
Replace saddle motor

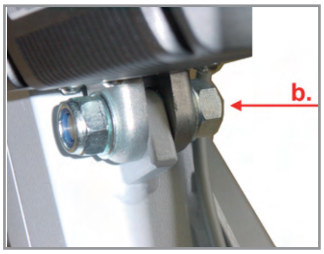
Troubleshooting

- Before replacing the saddle motor make sure that the motor is actually defective.
- For this check, switch the hexagon socket of the saddlemotor from channel 3 to channel 1 or 2.
- If the motor does not work, it is out of order and must be replaced.
- If the motor works, the motor control unit or the hand switch is defective.

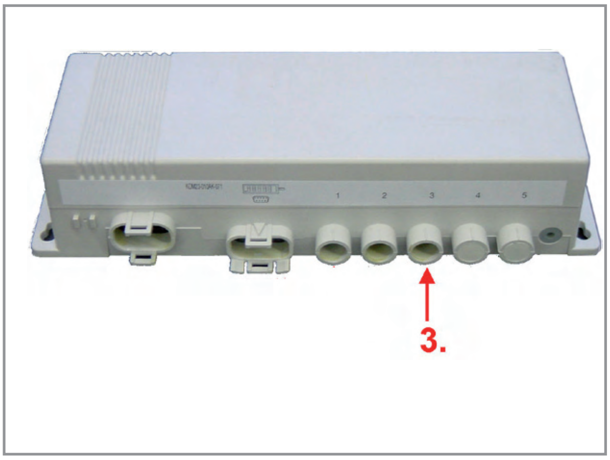
Before you can replace the saddle motor, the connectionbox and the casing must be removed first.Then follow these steps to replace the saddle motor:

- Loosen both hexagon socket screws a. of the saddle guide.
- Remove pin b. with self-locking screw.





- Disconnect plug of cable c. at motor control (connector 3. in illustration). To do so, first turnjack plug counterclockwise as far as possible (e.g. using a suitable fork wrench), then pullout the jack plug. Open cable tie and pull cable towards the saddlemotor.



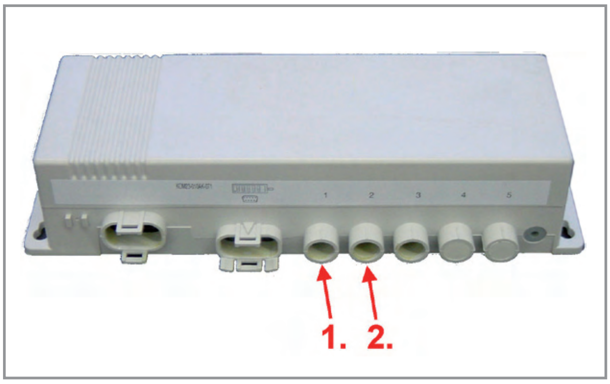
Note

- To facilitate pulling in the new saddle motor cable, attach a draw rope to the cable of the old saddle-motor)
- When mounting the new saddle motor, secure the motor control connection cable with a cable tie d, as shown in the illustration.

Replace Lift Motor for Couch Adjustment

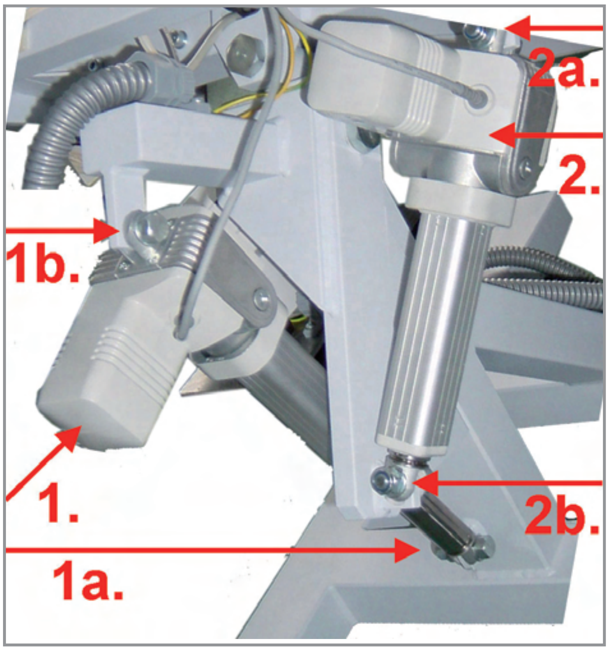
Troubleshooting

- Before replacing lift motor 1 or 2 for couch adjustment make sure that the motor is actually defective.
- For this check, switch the hexagon socket of liftmotor 1 from channel 1 to channel 2 or 3.
  For a test of lift motor 2, switch the hexagon socket- from channel 2 to channel 1 or 3.
- If the motor does not work, it is out of order and- must be replaced.
- If the motor works, the motorcontrol unit or the hand switch is defective.



Follow these steps to replace the couch adjustment motor:

- Set motor to the end position where the couch surface is completely horizontal and has a lateral tilt of 0°.
- When a motor has been removed, the couch surface must be protected against falling down!
- Disconnect system from mains!
- Disconnect connector 1. (lift motor for longitudinal adjustment) and/or connector 2 (liftmotor for left lateral tilt) from motor control unit.
  To do so, first turn jack plug counterclockwise as far as possible (e.g. using a suitable forkwrench), then pull out the jack plug.
- Loosen cable tie of the respective connectioncables.
- Remove pins 1a. + 1b. (lift motor for longitudinaladjustment) and/or pins 2a. + 2b. (lift motor forleft lateral tilt) with self-locking screw.
- Remove lift motor.



Note:
Reverse the above steps to install the new lift motor. Secure the connection cable to the motor controlunit with cable ties.

REPLACE EXTERNAL SPEED INDICATOR (eBIKE EL EXT.)

- Open connection box.
  Disconnect connection cable for external speed indicator from LRE or from BDE (devices with NIBP) board.
- Unscrew the screws securing the external speedindicator and remove the speed indicator by pulling it upward.

ADDENDUM

ERRORCODES SOFTWARE eBIKE II

Every electronic module of the eBike II ergometers has its own error codes.
If an error occurs, a hexadecimal code is displayed on the ergometer display and internally stored with date/time of first occurence and numbers of recurrences.
The displayed hexadecimal code is a combination of single error bits, each representing a special fault condition.

e.g.: Displayed Error Source: ZME
Err.Code: 0028 (hexadecimal)

Bit conversion:

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	(0028 hex)

Error bits set:

Bit 3	LCD communication error
Bit 5	+5V out of range

ERROR CODE BITS ZME

Bit	Error	Reaction	Display / Info	Troubleshooting
0	Illegal program jump	Safety shut down		- restart eBike (OFF / ON) - if error persists: replace ZME
1	Wrong SW configuration		Warning	- perform software update
2	not used			
3	LCD communication error	Safety shut down		- check LCD connection - replace LCD - replace ZME PCB
4	+24V out of range		Internal error	- check power supply - check connections: power supply to LRE cable ZME <-> LRE (or ZME <-> BDE BDE <-> LRE)
5	+5V out of range	Safety shut down		- restart eBike (OFF / ON) - if error persists: replace ZME
6	2,5V out of range	Safety shut down		- restart eBike (OFF / ON) - if error persists: replace ZME
7	Safety state mode	Safety shut down		- restart eBike (OFF / ON) - if error persists: replace ZME
8	RAM-Test error	Safety shut down		- restart eBike (OFF / ON) - if error persists: replace ZME

ERROR CODE BITS LRE

Bit	Error	Reaction	Display / Info	Troubleshooting
0	To high rotation		Warning	none - advise user to cycle less than 130 rpm
1	Load out of limit		Warning	- advise user to cycle between 30 and 130 rpm - perform static calibration
2	DMS Offs. invalid	Safety shut down		- perform static calibration OFFSET - if error persists: replace strain gauge
3	DMS Gain invalid	Safety shut down		- perform static calibration GAIN - if error persists: replace strain gauge
4	+24V out of range		Internal error	- check power supply - check connections: power supply to LRE cable ZME <-> LRE (or ZME <-> BDE BDE <-> LRE)
5	+5V out of range	Safety shut down		- restart eBike (OFF / ON) - if error persists: replace LRE
6	Brake not released.	Safety shut down		- check connections: LRE <-> brake LRE <-> strain gauge - perform static calibration
7	Safety state mode	Safety shut down		- restart eBike (OFF / ON) - if error persists: replace BDE
8	Setup not ready		Internal error	- restart eBike (OFF / ON) - if error persists: check cable ZME <-> LRE or BDE <-> LRE - replace LRE
9	CAN zykl. Timeout	Safety shut down		- restart eBike (OFF / ON) - if error persists: check cable ZME <-> LRE or BDE <-> LRE - replace LRE

ERROR CODE BITS BDE (BOODPRESSURE)

Bit	Error	Reaction	Display / Info	Troubleshooting
0	not used			
1	cuff loose		Warning	- check correct placement of cuff at patient (tight) - check cuff
2	Micro position		Warning	- check correct placement of microphone (see User Manual) - check microphone in cuff - replace cuff
3	Leakage		Warning	- check cuff - check hoses, hose connections - check compensation container - replace pneumatic unit
4	Errror Calibration	Module is switched off	Internal error	- perform NIBP test - perform NIBP calibration - replace BDE PCB
5	Error offset	Module is switched off	Internal error	- perform NIBP test - perform NIBP calibration - replace BDE PCB
6	not used			
7	not used			
8	Safety state mode	Module is switched off	Internal error	- restart eBike (OFF / ON) - if error persists: replace BDE
9	Setup not ready	Module is switched off	Internal error	- restart eBike (OFF / ON) - if error persists: check cable ZME <-> BDE - replace BDE
10	CAN zykl. Timeout	Module is switched off	Internal error	- restart eBike (OFF / ON) - if error persists: check cable ZME <-> BDE - replace BDE

ERROR CODE BITS MAE

Bit	Error	Reaction	Display / Info	Troubleshooting
0	Error seat sensor	Module is switched off	Internal error	- check cable sensor <-> MAE - - - check cable motor <-> MAE - if error persists: replace seat motor
1	Seat no movement	Module is switched off	Internal error	- check cable sensor <-> MAE - - - check cable motor <-> MAE - if error persists: replace seat motor
2	Wrong cabling	Module is switched off	Internal error	- check cable sensor <-> MAE - check cable motor <-> MAE - replace cables
3	not used			
4	+24V out of range		Warning	- check power supply - check connections: power supply to LRE cable LRE <-> MAE - replace MAE
5	not used			
6	not used			
7	Safety state mode	Module is switched off	Internal error	- restart eBike (OFF / ON) - if error persists: replace MAE
8	not used			
9	CAN zykl. Timeout	Module is switched off	Internal error	- restart eBike (OFF / ON) - if error persists: check cable LRE <-> MAE - replace MAE

Error code bits COM

Bit	Error	Reaction	Display / Info	Troubleshooting
0	not used			
1	not used			
2	not used			
3	not used			
4	+24V out of range		Warning	- check mounting of COM (DSUB connector) - check jumper on BKE - check power supply - check connections: power supply to LRE cable LRE <-> BKE - replace COM
5	not used			
6	not used			
7	Safety state mode	Module is switched off	Internal error	- restart eBike (OFF / ON) - check mounting of COM (DSUB connector) - check jumper on BKE - if error persists: replace COM
8	Setup not ready	Module is switched off	Internal error	- check mounting of COM (DSUB connector) - check jumper on BKE - restart eBike (OFF / ON) - if error persists: replace COM
9	CAN zykl. Timeout	Module is switched off	Internal error	- check mounting of COM (DSUB connector) - check jumper on BKE - restart eBike (OFF / ON) - if error persists: replace COM

PROTOCOL MTK ERGOMETER (ONLY VALID FOR GERMANY!)

Only valid for Germany!

GE Healthcare	**Prüfprotokoll gemäß MPBetreibV** **§6 Sicherheitstechnische Kontrolle** **§11 Messtechnischen Kontrolle**	**Blatt 1 von 1**
	Ergometer eBike, eBike L, eBike EL	**Prüfprotokollnr.:** ______________

Die durchgeführten und nachfolgend dokumentierten Prüfungen sind das Ergebnis einer messtechnischen Kontrolle gemäß MPBetreibV ergänzt durch gerätespezifische Zusatzanforderungen von GEMS IT.

Geprüftes Ergometer: Type: ________________ Serien Nr.: ________________

Letzte Überprüfung: Datum: ________________ Software: ________________

SEV: (VDE0751)

SL-Widerstand <0,3 Ohm

gemessen: ________ Ohm

Ersatzgeräteableitstrom <0,75mA

gemessen: _________ mA

☐ Messgerät Type: ________
Serien Nr.: _____________

☐ Messgerät Type: ________
Serien Nr.: _____________

☐ Messgerät Type: ________
Serien Nr.: _____________

☐ Messgerät Type: ________
Serien Nr.: _____________

Drehzahl [min^{-1}]		Leistung [W]			Befund
Soll	Ist [±1]	Soll	max. Abw.	Ist	
30					
40					
50					
100					
120					
Regelverhalten < 3 Watt oder ± 5%					
40		25	± 3 Watt		
40		50	±3 Watt		
40		100	±5Watt		
70		200	±10 Watt		
90		500	±25 Watt		
100		600	±30 Watt		

Prüfstand Type: SN: geprüft bis: Prüf ID.Nr.:
Separates Protokoll

7-Segment-Anzeige vollständig?		Ergometergehäuse unbeschädigt?	
LCD-Kontrast in Ordnung?		Spannungsführende Teile nicht berührbar?	
Lenkerstange Befestigung/unbeschädigt?		Messkopf unbeschädigt?	
Sattelstange Befestigung/unbeschädigt?		Tastatur unbeschädigt/Funktion ok?	
Mechanische Sattelverstellung ok?		Sattel- und Lenkerklemmung gefettet?	
Elektrische Sattelverstellung ok? (nur Comfort/L/EL)		Elektrische Liegenverstellung ok (nur L/EL)?	
Mechanische Gerätestütze ok (nur EL)? Bedienungsanleitung vorhanden?		Elektrische Seitenverstellung ok (nur EL)? Medizinproduktebuch vorhanden?	

bestanden ☐ nicht bestanden ☐ Bemerkungen:

Jahr der nächsten notwendigen messtechnischen Kontrolle: **20_ _**

Datum: ______________________ Unterschrift : __________________________

GE Medical Systems *Information Technologies* GmbH, Munzinger Str. 5, D-79111 Freiburg, Germany

Protocol MTK Bloodpressure module Ergometer (Only valid for Germany !)

Only valid for Germany!

GE Healthcare	**Prüfprotokoll über die Ergebnisse der messtechnischen Kontrolle gemäß §11, MPBetreibV**	**Blatt 1 von 1**
	Blutdruckmessgerät im Ergometer	**Prüfprotokollnr.:** ______________

Die durchgeführten und nachfolgend dokumentierten Prüfungen sind das Ergebnis einer messtechnischen Kontrolle gemäß DIN EN 1060-1 und DIN EN 1060-3, ergänzt durch gerätespezifische Zusatzanforderungen von GEMS IT.

Geprüftes Ergometer: **Typ:** __________ **Serien Nr.:** __________

Letzte Kalibrierung: **Datum:** __________

☐ Da bei der messtechnischen Kontrolle Ihres Medizinproduktes das Medizinproduktebuch nicht vorlag, werden Sie gebeten, die nachstehenden Angaben für Ihre Dokumentation zu verwenden.

Durchgeführte Prüfung	**Prüfergebnis/ermittelte Werte**	**Bemerkungen**
1. Sichtprüfung:	☐ i.O. ☐ n.i.O.	
2. Funktionsprüfung:	BDM-Werte: systolisch: ________ mmHg diastolisch: ________ mmHg Pulsrate: ________ min^{-1}	☐ Proband ☐ Patientensimulator
3. Luftundichtheitsprüfung [< **6 mmHg/min.**]	Druckabfall (50 mmHg): _______ mmHg/min. Druckabfall (300 mmHg): _______ mmHg/min.	
4. Anzeigefehler des Manschettendrucks (nach Aufpumpen ca. 3 Sek. abwarten)	[± 3 **mmHg**] mmHg | 0 | 50 | 100 | 150 | 200 | 250 | 300	

	eingesetzte Prüf-/Messmittel	**Bezeichnung, Typ**	**Seriennummer**
	- Kalibriertes Druckmessgerät		
	- Patientensimulator für Blutdruck		
	- Sonstige		
	- Sonstige		
	- Sonstige		

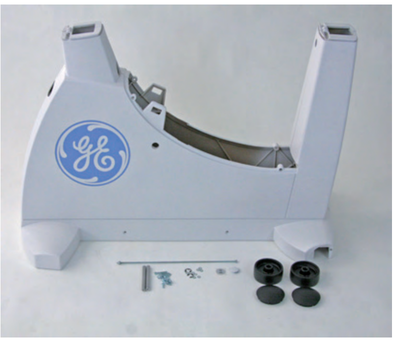
bestanden ☐ nicht bestanden ☐ Bemerkungen:

Jahr der nächsten turnusmäßigen messtechnischen Kontrolle: **20_ _**

Datum: ____________________ Unterschrift : ________________________

GE Medical Systems *Information Technologies* GmbH, Munzinger Str. 5, D-79111 Freiburg, Germany

2018111-017 SPARE EBIKE/B COVER SET R/L



Service Kit: casing eBike basic, kit

1x side panel eBike basic, left, with silk-screened GE logo
1x side panel eBike basic, right, with silk-screened GE logo
2x connection piece, diam. 10, length 100 mm
10x washer U4.3x9x0.8
4x screw M4x12 cyl.
2x screw M4x30 cyl.
4x screw M4x10, combi-slotted
2x screw M4x25 cyl.

2x hex nut M4, self-locking Cleveloc
1x cap D: 22.6, white
1x adhesive label 80x35
2x plastic wheel diam. 80 mm with slot
2x spring washer w/o. cap diam. 12x28 mm, galvanized, white
2x cap for plastic wheels
2x lock washer diam. 9 mm
2 x adhesive label roll 80x35 silver
1x adhesive label roll ø25 silver

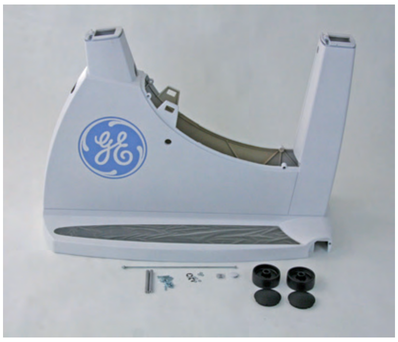
2018111-204 SPARE EBIKE/B COVER SET R/L US

Service Kit: casing eBike basic US, kit

1x side panel eBike basic US, left, with silk-screened GE logo
1x side panel eBike basic US, right, with silk-screened GE logo
2x connection piece, diam. 10, length 100 mm
10x washer U4.3x9x0.8
4x screw M4x12 cyl.
2x screw M4x30 cyl.
4x screw M4x10, combi-slotted
2x screw M4x25 cyl.

2x hex nut M4, self-locking Cleveloc
1x cap D: 22.6, white
1x adhesive label 80x35
2x plastic wheel diam. 80 mm with slot
2x spring washer w/o. cap diam. 12x28 mm, galvanized, white
2x cap for plastic wheels
2x lock washer diam. 9 mm
2 x adhesive label roll 80x35 silver
1x adhesive label roll ø25 silver

2018111-018 SPARE EBIKE/C COVER SET R/L



Service Kit: casing eBike comfort, kit

1x side panel eBike comfort, left, with silk-screened GE logo
1x side panel eBike comfort, right, with silk-screened GE logo
2x connection piece, diam. 10, length 100 mm
10x washer U4.3x9x0.8
4x screw M4x12 cyl.
2x screw M4x30 cyl.
2x screw M4x25 cyl.
1x threaded rod M4, length 325 mm, galvanized, blue

1x cap D: 24.6, white
1x foot rest cover left
1x foot rest cover right
1x adhesive label 80x35
2x plastic wheel diam. 80 mm with slot
2x spring washer w/o. cap diam. 12x28 mm, galvanized, white
2x cap for plastic wheels
2x lock washer diam. 9 mm
2 x adhesive label roll 80x35 silver
1x adhesive label roll ø25 silver

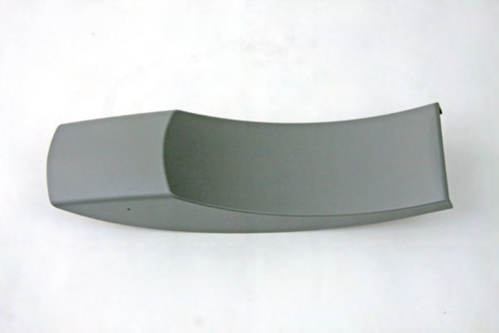
2018111-206 SPARE EBIKE/C COVER SET R/L US

Service Kit: casing eBike comfort US, kit

1x side panel eBike comfort US, left, with silk-screened GE logo
1x side panel eBike comfort US, right, with silk-screened GE logo
2x connection piece, diam. 10, length 100 mm
10x washer U4.3x9x0.8
4x screw M4x12 cyl.
2x screw M4x30 cyl.
2x screw M4x25 cyl.
1x threaded rod M4, length 325 mm, galvanized, blue

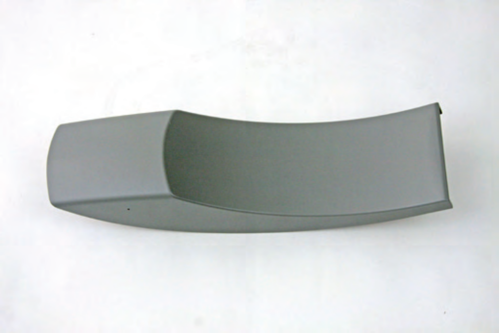
1x cap D: 24.6, white
1x foot rest cover left
1x foot rest cover right
1x adhesive label 80x35
2x plastic wheel diam. 80 mm with slot
2x spring washer w/o. cap diam. 12x28 mm, galvanized, white
2x cap for plastic wheels
2x lock washer diam. 9 mm
2 x adhesive label roll 80x35 silver
1x adhesive label roll ø25 silver

2018111-015 SPARE EBIKE/B COVER TOP GREY



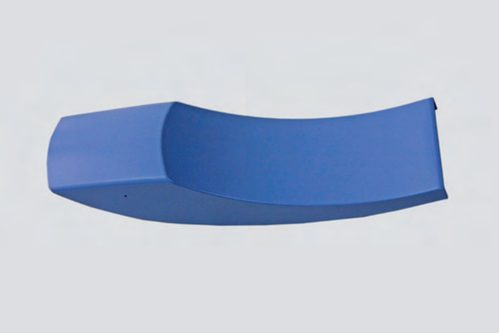
cover, top (grey) for eBike basic

2018111-205 SPARE EBIKE/B COVER TOP GREY US



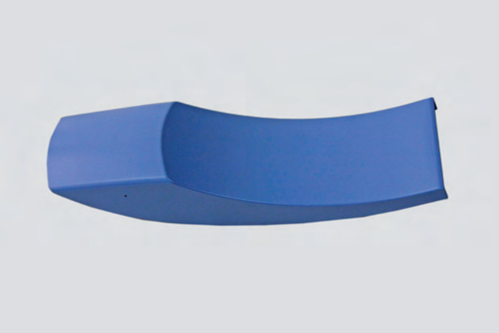
cover, top (grey) for eBike basic US

2018111-016 SPARE EBIKE/C COVER TOP BLUE



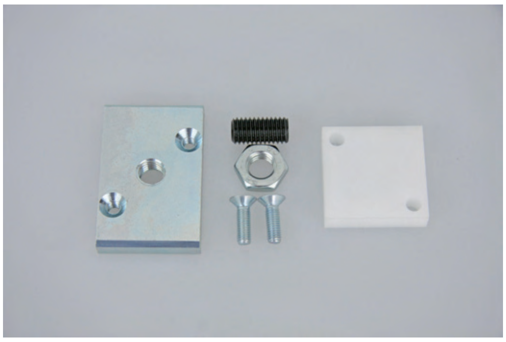
cover, top (GE blue) for eBike comfort

2018111-207 SPARE EBIKE/C COVER TOP BLUE US



cover, top (GE blue) for eBike comfort US

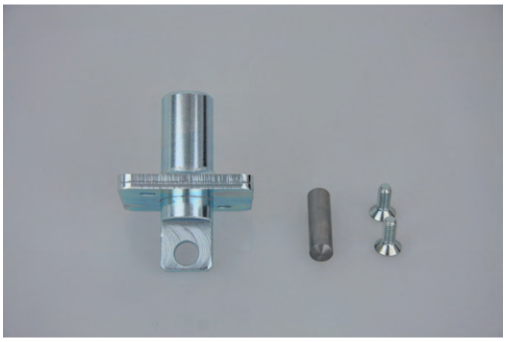
2018111-013 SPARE EBIKE/C SADDLE GUIDE



Service Kit: saddle guide eBike comfort

1x plate with threaded bushing, rear 54x35x8 mm
1x clamping block POM 35x35x8mm
1x nut M10
2x screw M5x16, galvanized
1x setscrew M10x20 with hexagon socket and flat point

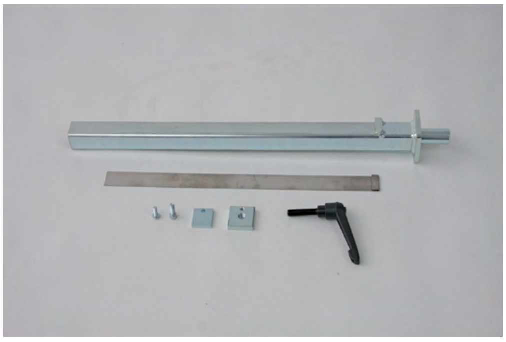
2018111-014 SPARE EBIKE/C SADDLE HOST



Service Kit: saddle host eBike comfort

1x saddle host with motor 55x55x75
1x straight pin, diam. 10x36
2x screw M6x16

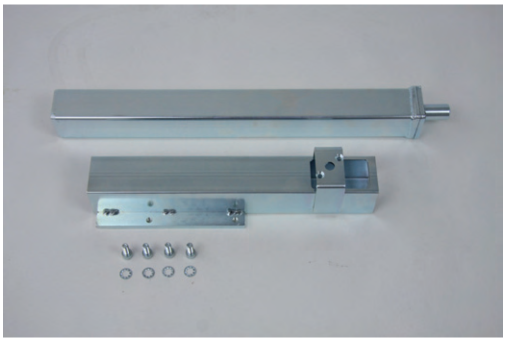
2018111-144 SPARE EBIKE II /B SADDLE TUBE



Service Kit: Assembled saddle tube w/o. motor for eBike II basic

1x saddle tube w/o motor for eBike II basic
1x plate with threaded bushing, 34x35x 8 mm
1x clamping sheet galvanized
1 x screw M6x20
1x setscrew M5x16
1x clamping lever M10x 40 for clamping of saddle/handlebar
1 x compensating sheet 0,5 mm
1x high-performance lubricant, white, approx. 5 g

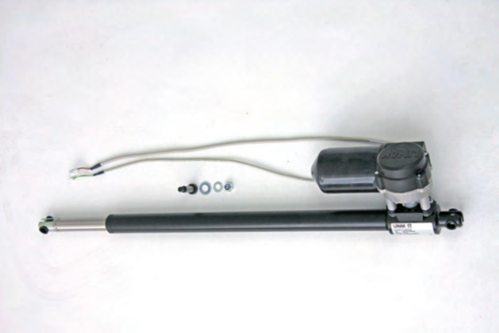
2018111-011 SPARE EBIKE/C SADDLE TUBE



Service Kit: Saddle tube, complete with motor for eBike comfort

1x saddle guide tube with motor 55x55x2 for eBike comfort
1x saddle tube with motor 50x50x3 for eBike comfort
4x screw M8 x 20
4x star washer 8.4x15x0.8
1x high-performance lubricant, white, approx. 5 g

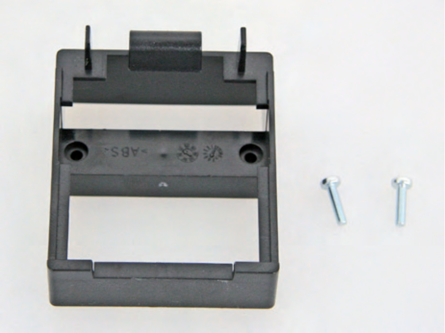
2018111-145 SPARE EBIKE II /C SADDLE MOTOR



Service Kit: saddle motor eBike II comfort

1x saddle motor eBike II, pre-assembled
1x shoulder bolt M8x25
1x washer U 8.4x16x1.6
1x washer U10.5x20x2
1x nut M8, self-locking

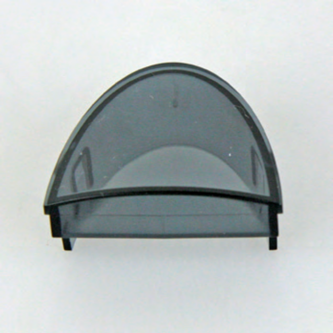
2018111-005 SPARE EBIKE BASE FOR SADDLE HEIGHT DSPLY



Service Kit: Base for saddle height display

1x base for saddle height display
2x screw M3x12

2018111-006 SPARE EBIKE WNDW FOR SADDLE HEIGHT DSPLY

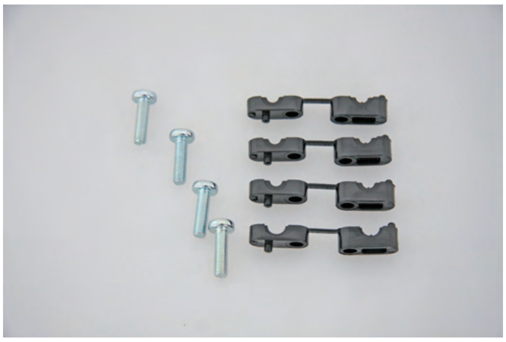


Window for saddle height display

2018111-146 SPARE EBIKE II /C CABLE LRE MAE

Patch cable (1 m) connecting PCB LRE and PCB MAE

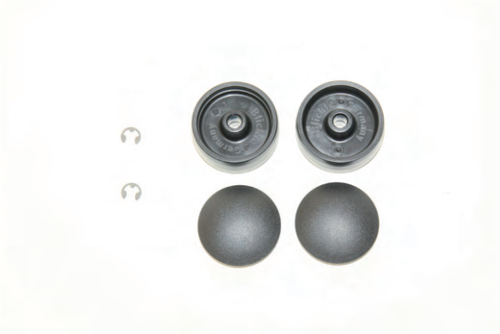
2018111-020 SPARE EBIKE STRAIN RELIEF SET



Service Kit: Strain relief, kit

3x cable strain relief, size 1, black, 4.5 - 5.7 mm
1x cable strain relief, size 3, black, 6.5 - 7.7 mm
4x screw M5x18 Li Kr

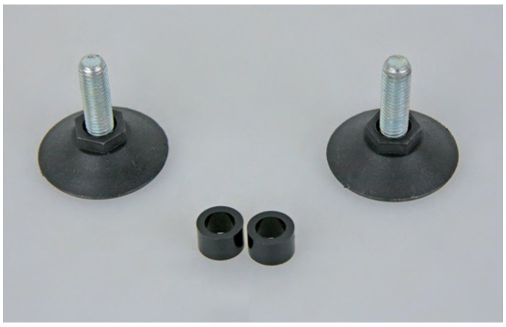
2018111-019 SPARE EBIKE WHEEL SET



Service Kit: Plastic wheels, kit

2x plastic wheel diam. 80 mm with slot
2x spring washer w/o. cap diam. 12x28 mm, galvanized, white
2x cap for plastic wheels x lock washer diam. 9 mm

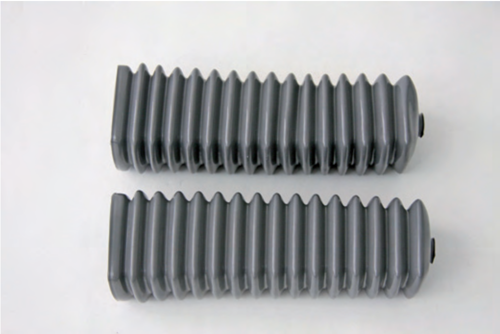
2018111-021 SPARE EBIKE LEG LEVELLERS



Service Kit: Levelling device, kit

2x levelling device M10x30

2018111-024 SPARE EBIKE BELLOW SET



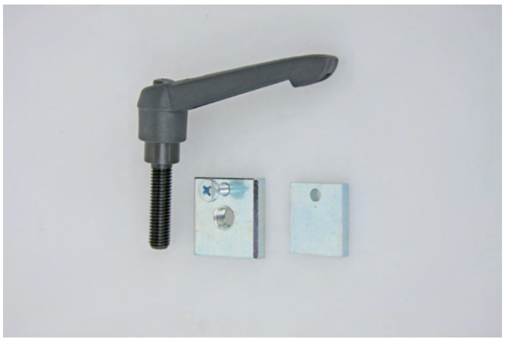
Service Kit: Bellows kit

1x bellows handlebar, grey, for eBike
1x bellows saddle, grey, for eBike

2018111-022 SPARE EBIKE SADDLE STANDARD

Bicycle saddle, standard

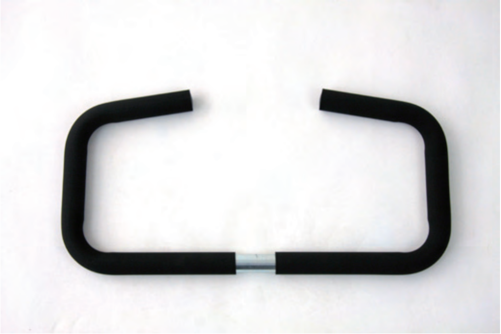
2018111-148 SPARE EBIKE II /B CLMPG LEVER/PLATE SET



Service Kit: Plate with threaded bushing and clamping lever, incl. grease

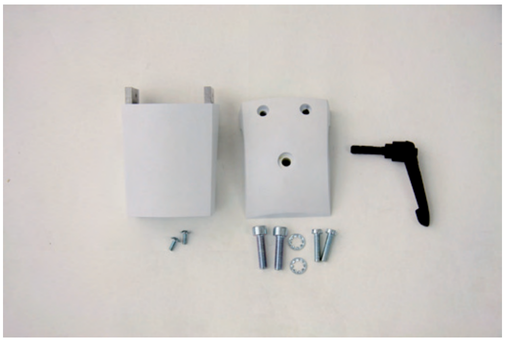
- *1x threaded plate 34x35x8 mm*
- *1x clamping sheet 30x26x5 mm*
- *1x clamping lever M10x 40*
- *1x screw M6x20*
- *1x screw M5x16*
- *1x high-performance lubricant, white, approx. 5 g*

2018111-026 SPARE EBIKE HANDLEBAR 500MM



Handlebar with clamping opening, width 500 mm

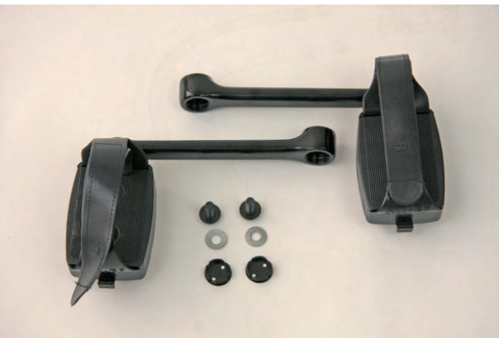
2018111-025 SPARE EBIKE ADAPTER TERMINAL



Service Kit: Control terminal adapter for eBike

- *1x control terminal adapter, 2 parts*
- *2x star washer Z 8.4x15x0.8*
- *2x screw M8x35*
- *1x clamping lever M8x30 for clamping of handlebar*
- *2x screw M6x25 cyl., slot*
- *2x screw M4x10*

2018111-027 SPARE EBIKE CRANK/PEDAL SET R/L



Pedal set, left and right, cranks and pedals

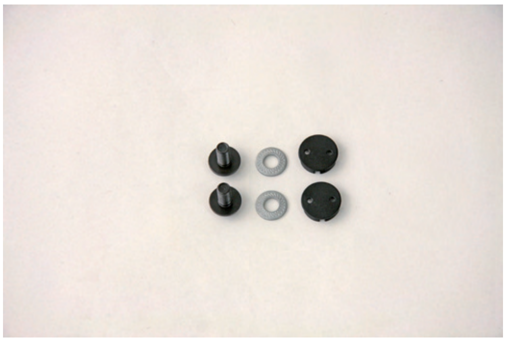
1x crank, left, square, 170 mm
1x crank, right, square, 170 mm
1x pedal, home trainer, left and right, with Velco strap
2x combi-slotted screw M8x1x18
2x lock washer
2x cap for crank thread

2018111-028 SPARE EBIKE PEDAL SET R/L

Pedal set

1x pedal, home trainer, left and right, with Velco strap

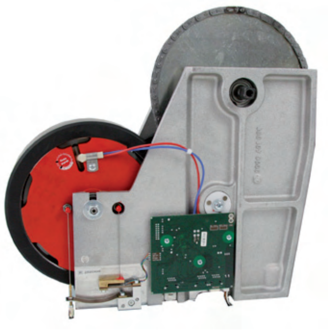
2018111-029 SPARE EBIKE SCREW SET FOR CRANKS



Service Kit: screw set for pedal kit

2x combi-slotted screw M8x1x18
2x lock washer
2x cap for crank thread

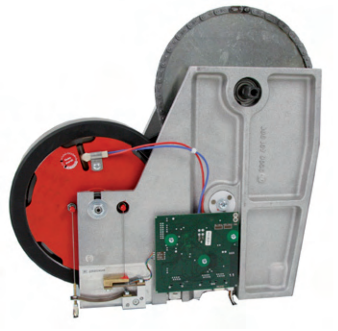
2018111-149 SPARE EBIKE II DRIVE UNIT



Service Kit: drive unit, new, for eBike II

1x drive unit eBike II, assembled
6x screw M8x20
6x star washer 8.4x15x0.8

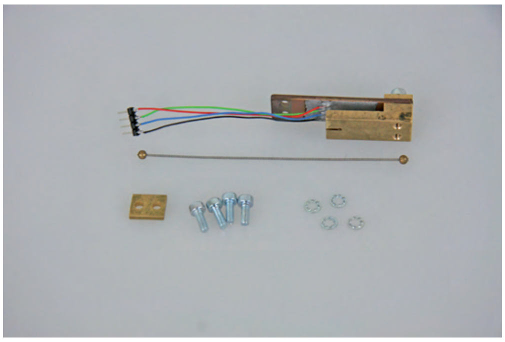
2018111-150 SPARE EBIKE II DRIVE UNIT EXCHANGE



Service Kit: drive unit, replacement, for eBike II L/EL

1x drive unit eBike II, replacement, assembled
6x screw M8x20
6x star washer 8.4x15x0.8

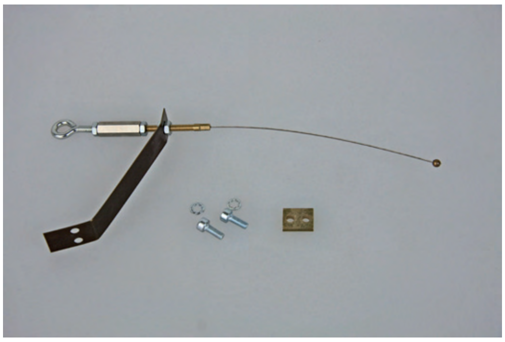
2018111-032 SPARE EBIKE STRAIN GAUGE



Service Kit: Strain gauge, kit

1x strain gauge, pre-assembled for drive unit eBike
1x clamping plate
2x star washer F3.2
2x screw M3x10
1x micro rope, short, diam. 0.81 mm 7x7, length 88.7 mm, for eBike

2018111-033 SPARE EBIKE RETURN SPRING



Service Kit: return spring with micro rope

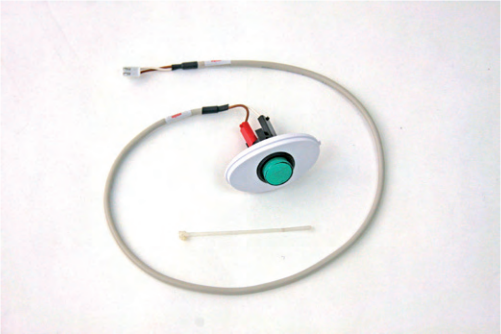
1x return spring with micro rope, diam. 0.6 mm 1x19, length 125 mm
1x clamping plate
2x star washer F3.2
2x screw M3x8

2018111-152 SPARE EBIKE II POWER SUPPLY

Service Kit: power supply module for eBike II, kit

1xpower supply 24V, 2.5A, 60VA, 50/60 Hz, preassembled

2018111-153 SPARE EBIKE II POWER SWITCH



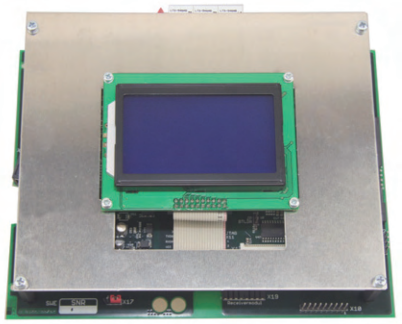
Service Kit: power switch with paneling for eBike II, kit

1x power switch, pre-assembled, for eBike II
1x cable connecting the power supply to the PCB LRE
1x cable tie

2018111-154 SPARE EBIKE II CABLE MAINS EURO

Power cord, black, length 2.5 m, German connector

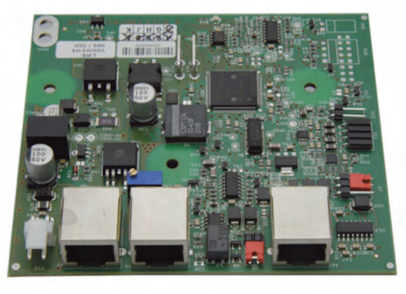
2018111-155 SPARE EBIKE II /B PCB ZME



PCB ZME kit for eBike II basic

1x ZME P module, pre-assembled
4x screw M3x8
4x plastic washer 3,2x7x0,5

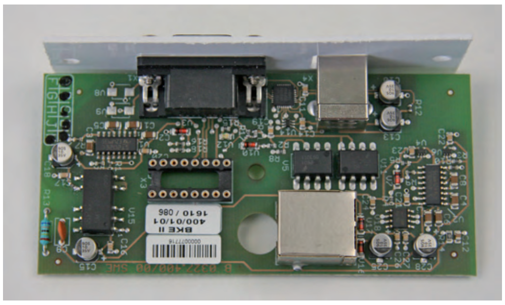
2018111-157 SPARE EBIKE II PCB LRE



PCB LRE kit for eBike II

1x PCB LRE
3x screw M3x6
3x washer 3,2x6

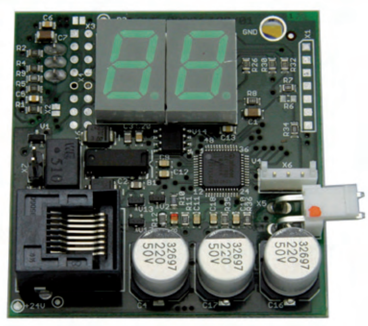
2018111-158 SPARE EBIKE II PCB BKE



PCB BKE kit for eBike II

1x PCB BKE

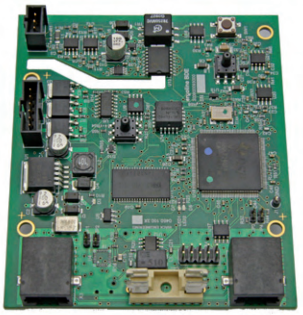
2018111-147 SPARE EBIKE II /C PCB MAE



PCB MAE kit for eBike II comfort

1x PCB MAE

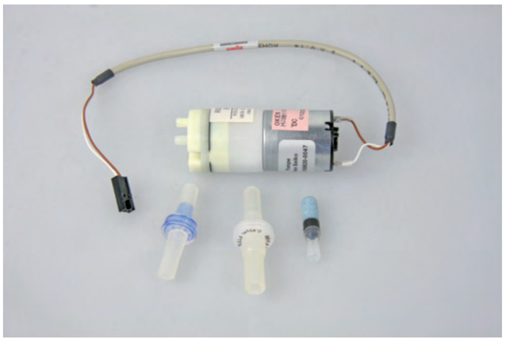
2018111-160 SPARE EBIKE II /C PCB BDE



PCB BDE kit for eBike II (with bloodpressure)

1x PCB BDE

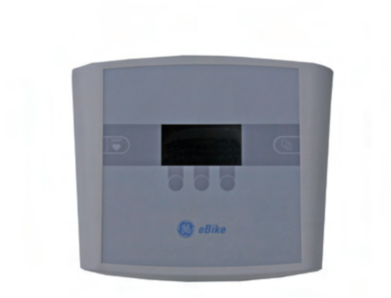
2018111-161 SPARE EBIKE II BP PUMP MODULE



Service Kit: blood-pressure module (pump unit) for eBike II

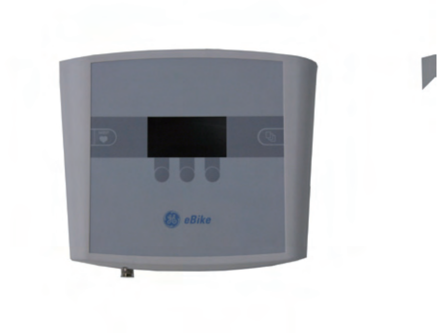
1x blood-pressure pump
1x input filter unit
2x sound absorber
1x check valve

2018111-162 SPARE EBIKE II TRMNL PC NEW



1x control terminal eBike II PC, new, standard (= w/o. BP), GE
2x screw M4x10, combi-slotted

2018111-163 SPARE EBIKE II TRMNL PC W BP NEW



1x control terminal eBike II PC, new, with BP, GE
2x screw M4x10, combi-slotted

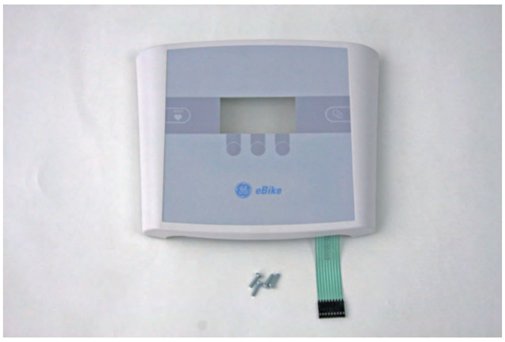
2018111-164 SPARE EBIKE II TRMNL PC EXCHANGE

1x control terminal eBike II PC, replacement, standard (= w/o. BP), GE
2x screw M4x10, combi-slotted

2018111-165 SPARE EBIKE II TRMNL PC W BP EXCHANGE

1x control terminal eBike II PC, replacement, with BP module, GE
2x screw M4x10, combi-slotted

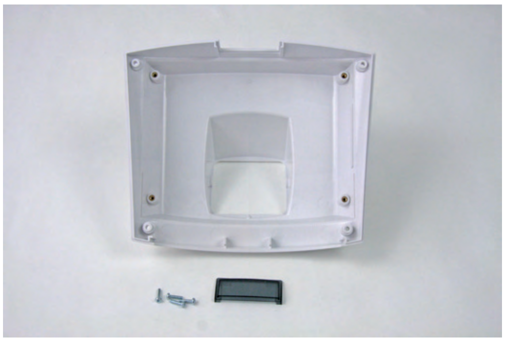
2018111-166 SPARE EBIKE II TRMNL PC HOUSING TOP



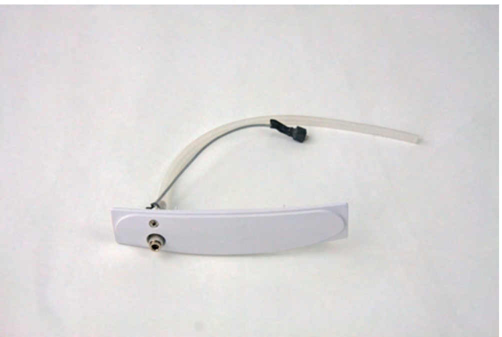
Service Kit: control terminal housing PC eBike II, top shell

1x top shell for control terminal PC eBike II
1x membrane keypad PC with small display (GE version)
4x screw M3x12

2018111-172 SPARE EBIKE II TRMNL PC HOUSING BOTTOM

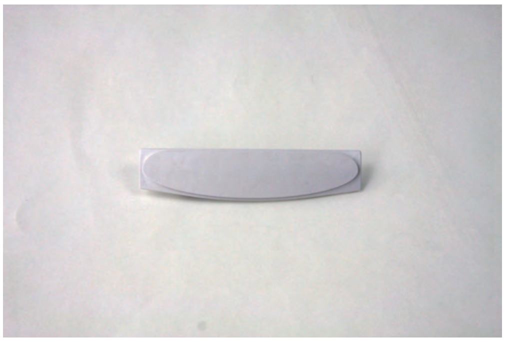


2018111-173 SPARE EBIKE II TRMNL PANEL W BP



1x connector panel for control terminal eBike II with BP
1x jack bushing 2.5 mm for connecting cuff
1x cable panel to microphone cable
1x tube coupling control terminal eBike II
1x tube 3x2 mm, 285 mm length

2018111-054 SPARE EBIKE TERMINAL PANEL W/O BP



2018111-056 SPARE EBIKE SCREW SET

Service Kit: screw set, kit

4x screw M3x8 cyl.
2x screw M3x8, Philips
2x screw M3x12
2x screw M3x14
4x screw D 3.5x9.5
4x screw M4x8
6x screw M4x10, combi-slotted
16x screw M4x12 cyl.

4x screw M4x30 cyl.
2x screw M5x16
4x screw M5x18, Philips
2x screw M6x16
2x screw M6x25
6x screw M8x20 cyl.
2x screw M8x35 cyl.
1x shoulder bolt 10, M8x25
1x knurled screw M3x8
5x washer F 3.2x6x0.4
12x washer U 4.3x9x0.8
10x washer Z 4.3x8x0.5
14x washer Z 8.4x15x0.8
1x washer U 8.4x16x1.6
1x washer U 10.5x20x2
1x hex nut M3
1x hex nut M4
2x hex nut M4, self-locking
1x nut M8, self-locking
4x nut M10
2x setscrew M5x16
1x setscrew M10x20
1x straight pin D 10m6x36
1x spacer pin M3 12 mm
1x spacer pin M3 28 mm
4x stand-off 12.7 mm
1x fixture for power cord
1x cable bushing black
1x threaded rod M4 325 mm

2018111-174 SPARE EBIKE II CABLE SET

Service Kit: patch cable set, kit

1x patch cable 0,5 m
1x patch cable 1,0 m
1x patch cable 1,5 m

2018112-069 MNL SVCE EBIKE II

Servicing Instructions System eBike II, English

2017911-010 SPLY EBIKE CUFF ADULT STD TUBE 130CM

BP cuff, adults, 130 cm tubing

2017911-011 SPLY EBIKE CUFF ADULT STD TUBE 200CM

BP cuff, adults, 200 cm tubing

2017911-012 SPLY EBIKE CUFF ADULT LARGE TUBE 130CM

BP cuff, adults, long version, 130 cm tubing

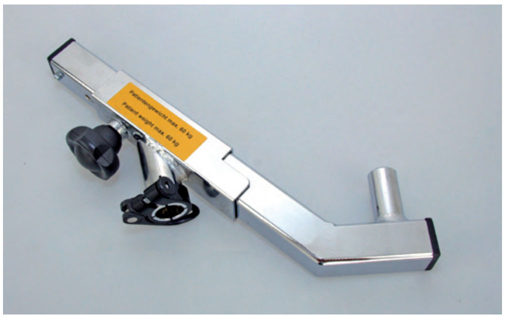
2017911-013 SPLY EBIKE CUFF ADULT LARGE TUBE 200CM

BP cuff, adults, long version, 200 cm tubing

2017911-014 SPLY EBIKE CUFFADULT SMALL TUBE 130CM

BP cuff, adults, small version, 130 cm tubing

2017911-015 SPLY EBIKE SADDLE MOUNT INFANT



saddle mount for children's saddle, eBike basic/comfort

2017911-016 SPLY EBIKE SADDLE INFANT

children's saddle, black

2017911-017 SPLY EBIKE SADDLE SPORT

racing saddle, black

2017911-018 SPLY EBIKE SADDLE MOUNT HOR ADJUSTABLE

saddle fixture, horizontally adjustable

2017911-019 SPLY EBIKE CRANK SET ADJUSTABLE

Adjustable cranks for eBike

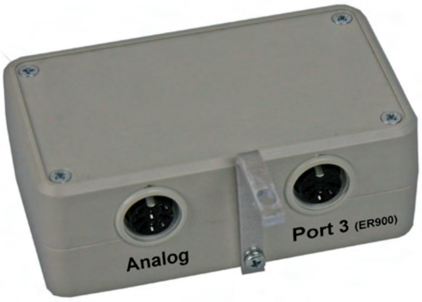
2 pc. combi screw M8 x 1 x 18, SW 14 mm
2 pc. ribbed disk
2 pc. terminal cap for pedal cranks
1 pc. Allan key, black, width 5 mm (for adjustment of crank length)

2017911-130 SPLY EBIKE II USB DRIVER CD

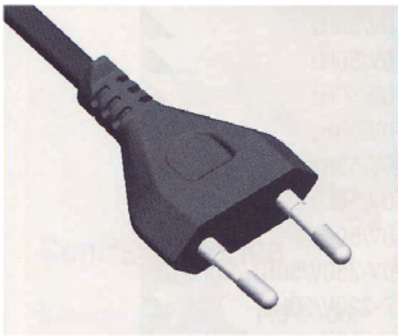
USB Driver for eBike II
REF 2017911-130 Rev x
CE
Rx only

2017911-131 SPLY EBIKE II USB CABLE 5M

2017911-132 SPLY EBIKE II COM MODULE

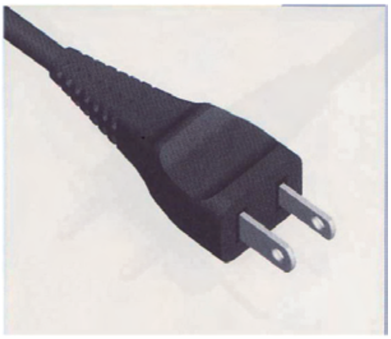


2017911-140 SPLY EBIKE II PWR CORD C EURO

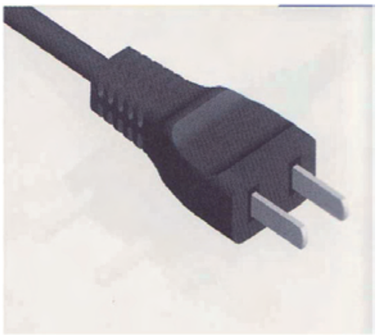


2017911-141 SPLY EBIKE II PWR CORD G2 UK

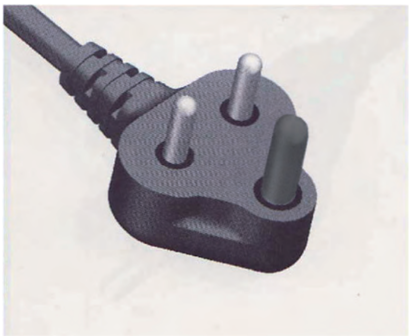
2017911-142 SPLY EBIKE II PWR CORD A US



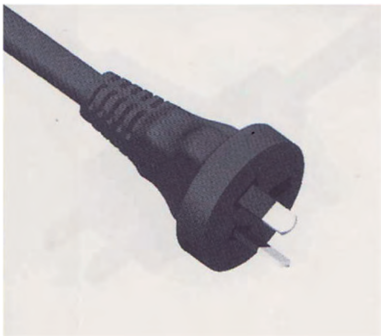
2017911-143 SPLY EBIKE II PWR CORD AC CHINA



2017911-144 SPLY EBIKE II PWR CORD M2 SOUTH AFRICA



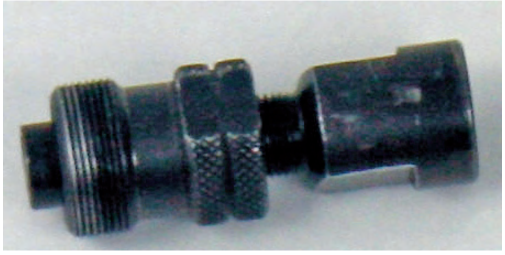
2017911-145 SPLY EBIKE II PWR CORD I2 AUSTRALIA



2018111-135 SPARE EBIKE L&EL CALIBRATION WEIGHT 8KG

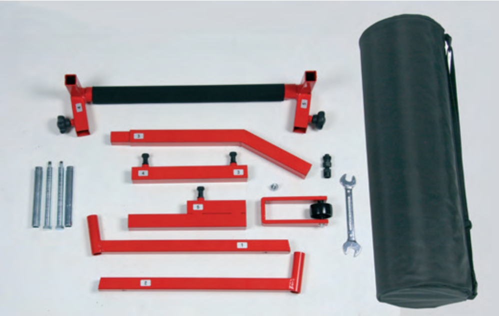
8 kg calibration weight, incl. Hook

2005737-001 TOOL PEDAL PULLER VARIOBIKE 500



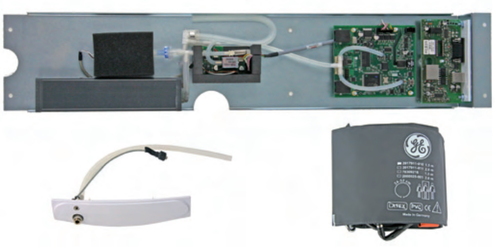
Pedal puller

2018112-143 ERGOMETER EBIKE LIFT-UP SERVICE TOOL



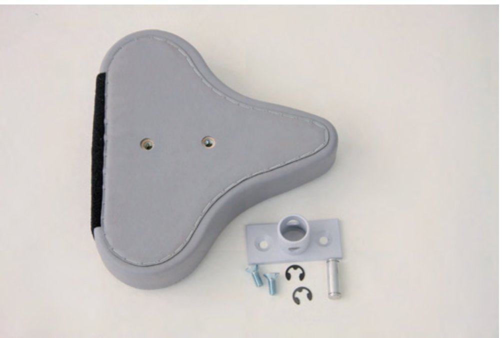
Service tool: Lift support for eBike

2017911-133 ERGOMETER EBIKE II BP ADD-ON KIT



Bloodpressure upgrade for use with eBike II

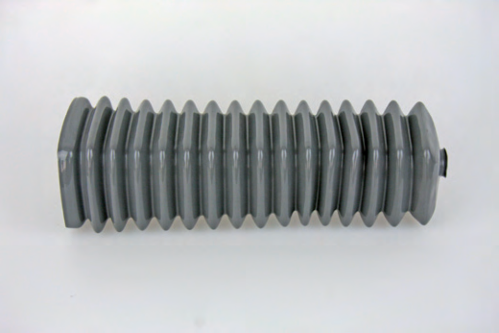
2018111-064 SPARE EBIKE L&EL SADDLE STANDARD



Service Kit: Saddle for eBike L/EL

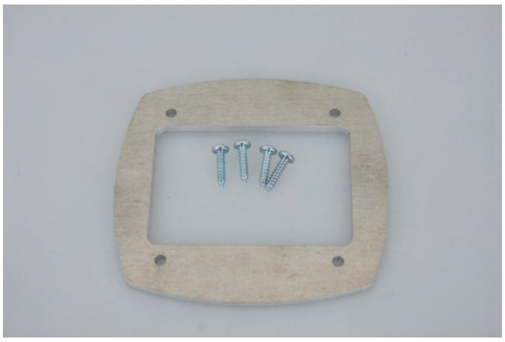
1x saddle for eBike L/EL
1x socket pin1x locking washer

2018111-065 SPARE EBIKE L&EL BELLOWS FOR SADDLE



1x bellows saddle, grey, for eBike

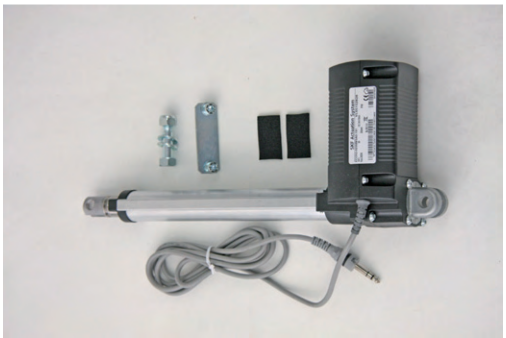
2018111-066 SPARE EBIKE L&EL HOLDER FOR BELLOW SDLE



Service Kit: Holder for bellows, saddle

1x retaining piece bellows saddle
4x washer U 4.3
4x screw 3.5 x 16

2018111-067 SPARE EBIKE L&EL SADDLE MOTOR



Service Kit: Saddle motor eBike L / EL, complete

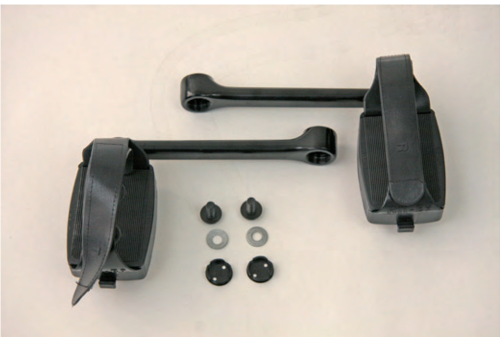
1x saddle motor eBike L / EL
1x stud screw SW19
2x washer U13
1x nut M12, self-locking
1x clamp2x screw
1x foam rubber
1 x cable tie, 280 mm

2018111-028 SPARE EBIKE PEDAL SET R/L

Service Kit: Pedal set

1x pedal, hometrainer, left, with Velcro strap
1x pedal, home trainer, right, with Velco strap

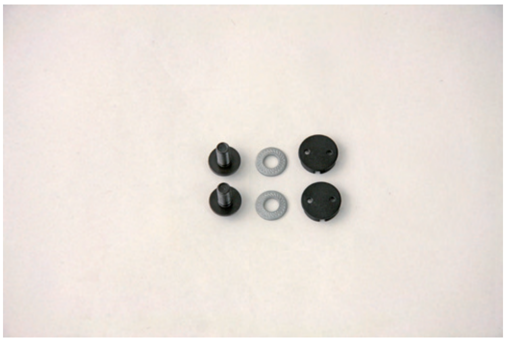
2018111-027 SPARE EBIKE CRANK/PEDAL SET R/L



Service Kit: Pedal set, left and right, cranks and pedals

1x crank, left, square, 170 mm
1x crank, right, square, 170 mm
1x pedal, home trainer, left and right, with Velco strap
2x combi-slotted screw M8x1x18
2x lock washer
2x end cap for crank

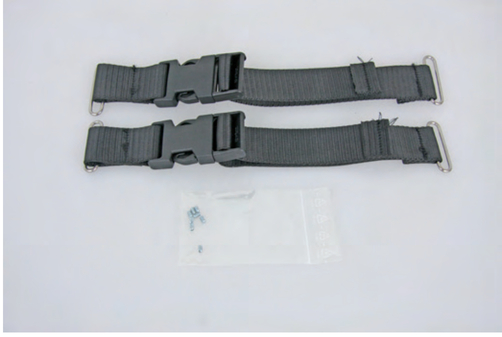
2018111-029 SPARE EBIKE SCREW SET FOR CRANKS



Service Kit: screw set for pedal kit

2x combi-slotted screw M8x1x18
2x lock washer
2x cap for crank thread

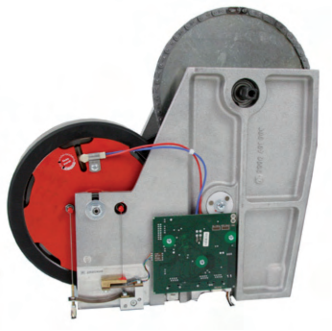
2018111-175 SPARE EBIKE II L STRAP PEDAL SHOE R/L



Service Kit: strap for pedal shoe

2x Strap 450 mm, for pedal shoe with plastic clip
2x grub screw
8x setscrew M3x5

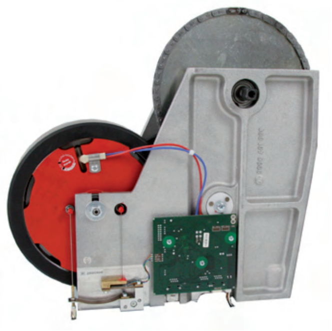
2018111-192 SPARE EBIKE II L/EL DRIVE UNIT



Service Kit: drive unit, new, for eBike II

1x drive unit eBike II, assembled
6x screw M8x20
6x star washer 8.4x15x0.8

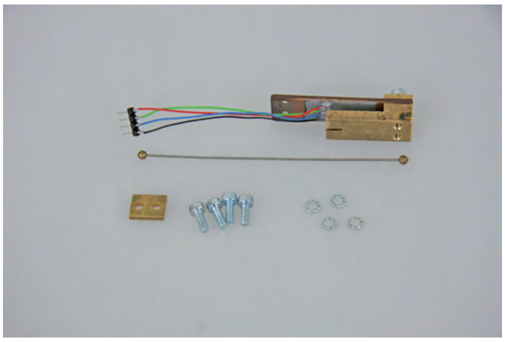
2018111-193 SPARE EBIKE II L/EL DRIVE UNIT EXCHANGE



Service Kit: drive unit, replacement, for eBike II L/EL

1x drive unit eBike II, replacement, assembled
6x screw M8x20
6x star washer 8.4x15x0.8

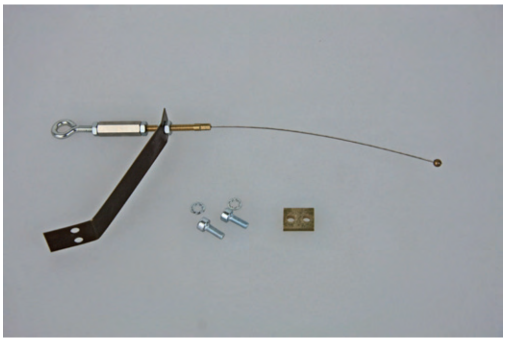
2018111-032 SPARE EBIKE STRAIN GAUGE



Service Kit: Strain gauge, kit

1x strain gauge, pre-assembled for drive unit eBike
1x clamping plate
2x star washer F3.2
2x screw M3x10
1x micro rope, short, diam. 0.81 mm 7x7, length 88.7 mm, for eBike

2018111-033 SPARE EBIKE RETURN SPRING



Service Kit: return spring with micro rope

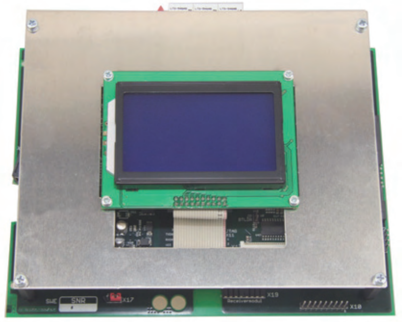
1x return spring with micro rope, diam. 0.6 mm 1x19, length 125 mm
1x clamping plate
2x star washer F3.2
2x screw M3x8

2018111-151 SPARE EBIKE CHAIN

Service Kit: chain for drive unit

1x chain for drive unit

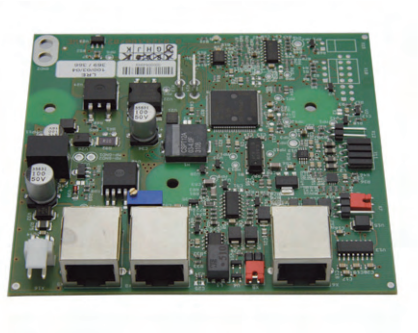
2018111-155 SPARE EBIKE II /B PCB ZME



PCB ZME kit for eBike II basic

1x ZME P module, pre-assembled
4x screw M3x8
4x plastic washer 3,2x7x0,5

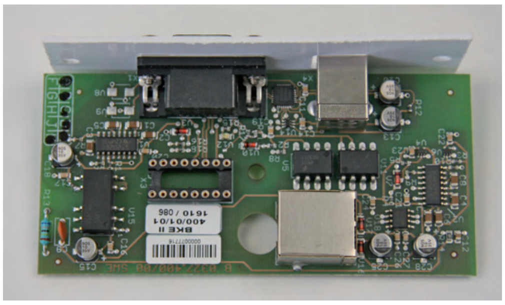
2018111-176 SPARE EBIKE II L /EL PCB LRE



PCB LRE kit for eBike II (L and EL only)

1x PCB LRE
3x screw M3x6
3x washer 3,2x6

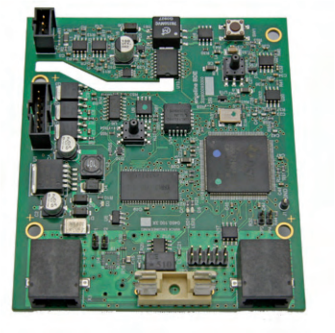
2018111-158 SPARE EBIKE II PCB BKE



PCB BKE kit for eBike II

1x PCB BKE

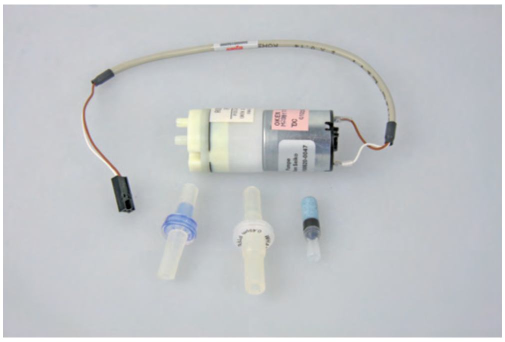
2018111-160 SPARE EBIKE II PCB BDE



PCB BDE kit for eBike II (with bloodpressure)

1x PCB BDE

2018111-161 SPARE EBIKE II BP PUMP MODULE



Service Kit: blood-pressure module (pump unit) for eBike II

- *1x blood-pressure pump*
- *1x input filter unit*
- *2x sound absorber*
- *1x check valve*

2018111-151 SPARE EBIKE CHAIN

Service Kit: chain for drive unit

1x chain for drive unit

2018111-162 SPARE EBIKE II TRMNL PC NEW

1x control terminal PCplus, new, standard (= w/o. BP), GE
2x screw M4x10, combi-slotted

2018111-163 SPARE EBIKE II TRMNL PC W BP NEW

1x control terminal PCplus, new, with BP module, GE
2x screw M4x10, combi-slotted

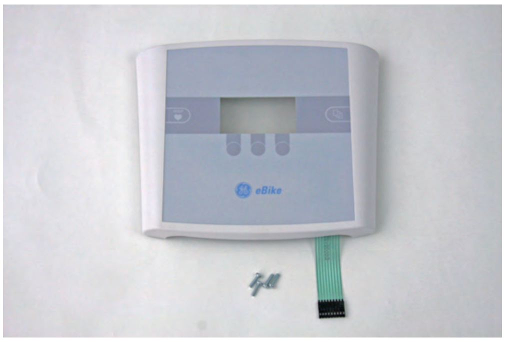
2018111-164 SPARE EBIKE II TRMNL PC EXCHANGE

1x control terminal PC plus, replacement, standard(= w/o. BP), GE
2x screw M4x10, combi-slotted

2018111-165 SPARE EBIKE II TRMNL PC W BP EXCHANGE

1x control terminal PC plus, replacement, with BP module, GE
2x screw M4x10, combi-slotted

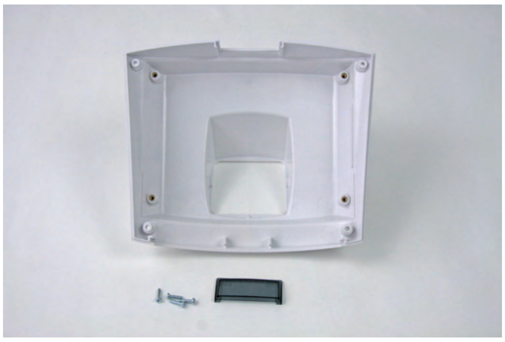
2018111-166 SPARE EBIKE II TRMNL PC HOUSING TOP



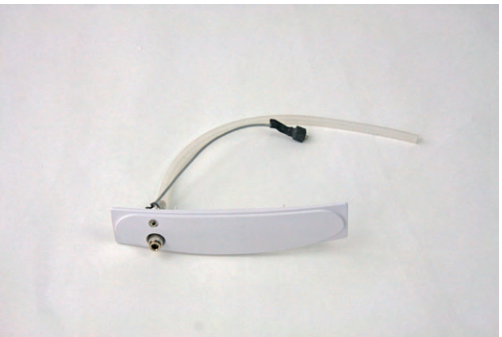
Service Kit: control terminal housing PCplus eBike II, top shell

1x top shell for control terminal PC plus eBike II
1x membrane keypad PCplus with large display (GE version)
4x screw M3x12

2018111-172 SPARE EBIKE II TRMNL PC HOUSING BOTTOM

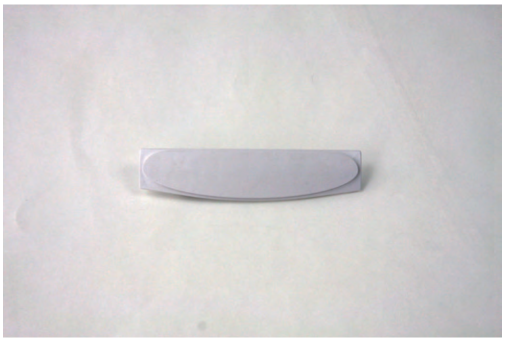


2018111-173 SPARE EBIKE II TRMNL PANEL W BP

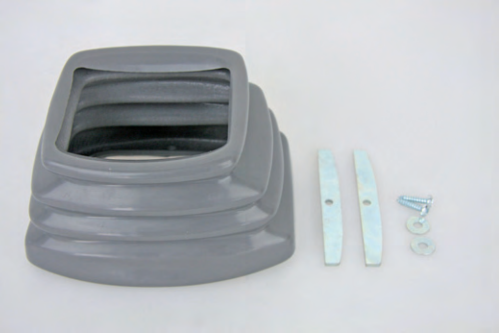


1x connector panel for control terminal eBike II with BP
1x jack bushing 2.5 mm for connecting cuff
1x cable panel to microphone cable
1x tube coupling control terminal eBike II
1x tube 3x2 mm, 285 mm length

2018111-054 SPARE EBIKE TERMINAL PANEL W/O BP



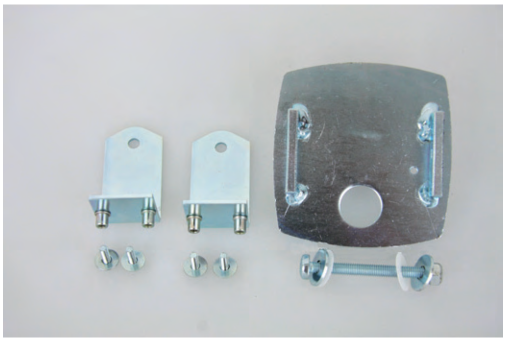
2018111-081 SPARE EBIKE L&EL BELLOW FOR TERMINAL



Service Kit: Control terminal bellows

1x bellows, control terminal
2x retaining piece bellows control terminal
2x washer U4.3
2x screw 3.5x16

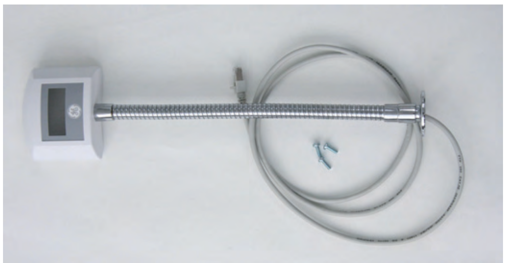
2018111-202 SPARE EBIKE II L&EL HOLDER FOR TERMINAL



Service Kit: Terminal bracket

2x retaining piece control terminal eBike II L/EL
4x washer U4.3
4x screw M4x12
1x retaining piece control terminal eBike II L/EL
2x spacer control terminal POM
1x screw M6x60
2x washer U6.4
1x nut M6, self-locking

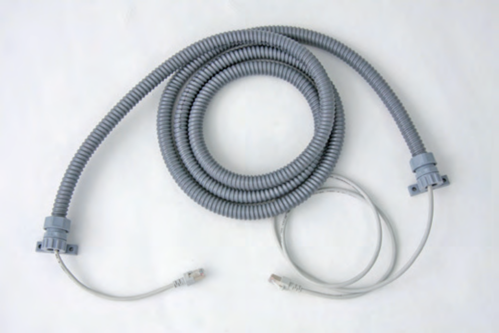
2018111-177 SPARE EBIKE II L&EL REVOLUTION DISPLAY



Service Kit: External speed indicator for eBike II L/EL

1x external spped indicator, complete withgoose neck and connection cable
1x mounting material

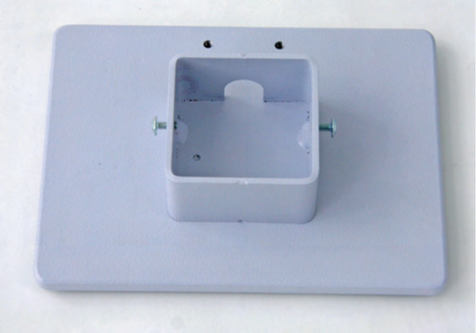
2018111-178 SPARE EBIKE II L&EL TUBE EXT TRMNL



Service Kit: Flex tubing for external terminal eBike II L/EL

2,5m Flexa tube AD 19PG 13,5mm, assembled with
2x screw connect PG 13,5mm
2x mounting angle PG 13,5mm
4x screw M5x16mm
4m cablel LRE to ext. Terminal
1x RJ 45 connector

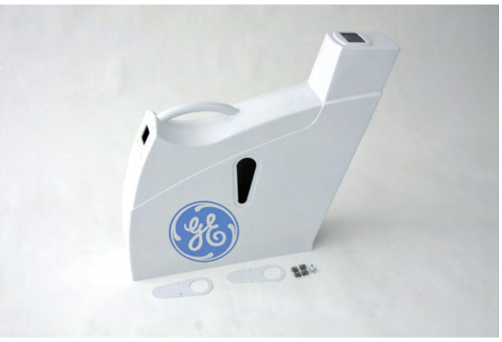
2018111-179 SPARE EBIKE II L&EL STND PANEL EXT TRMNL



Service Kit: Foot for external control terminal eBike II L/EL

- *1x foot, external, eBikeII L/EL*
- *4x leg, grey*
- *2x screw M4x10*

2018111-180 SPARE EBIKE II L&EL COVER WITH HANDHOLD



Service Kit: Casing eBike II L / EL

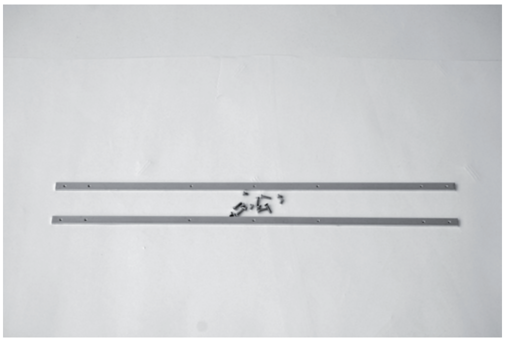
- *1x cover eBike II L EL*
- *2x cover plate L_EL*
- *4x nut M4*
- *4x screw M4x10*
- *2x cable tie holder*
- *2x cable tie*
- *2x retaining ledge for cover L/EL*
- *8x screw M3x6*

2018111-208 SPARE EBIKE II L&EL COVER WITH HANDHOLD US

Service Kit: Casing eBike II L / EL US

- *1x cover eBike II L EL US*
- *2x cover plate L_EL*
- *4x nut M4*
- *4x screw M4x10*
- *2x cable tie holder*
- *2x cable tie*
- *2x retaining ledge for cover L/EL*
- *8x screw M3x6*

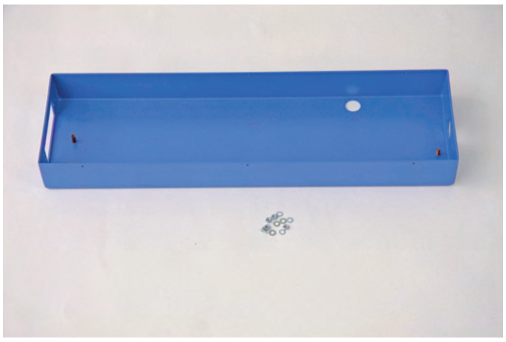
2018111-181 SPARE EBIKE II L&EL RETAINING LEDGE



Service Kit: retaining ledge eBike II L / EL

- *2x retaining ledge for cover L/EL*
- *8x screw M3x6*
- *6x screw M3x12mm*

2018111-182 SPARE EBIKE II L&EL CONNECTION BOX



Service Kit: Connection box for eBike II L/EL

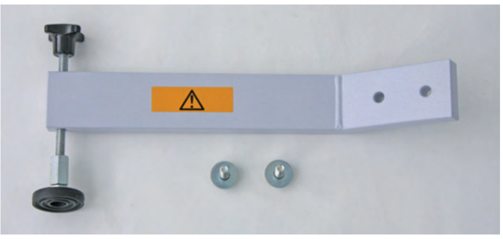
1x connection box for eBike II L/EL preassembled
6x screw M3x12
2x screw M4x10
2x nut M4
3x washer 4,3x9
3x lock washer 4,3x8
1x screw M3X6
1x plastic washer 3,2x7

2018111-113 SPARE EBIKE L&EL CASTOR SET

Service Kit: Castor, locking

4x castors, locking, diam. 50
1x Allan key, size 8 5/16

2018111-114 SPARE EBIKE EL OUTRIGGER SUPPORT



Service Kit: Outrigger left, complete for eBike EL

1x outrigger eBike EL, fully assembled
2x washer U10
2x screw M10x40

2018111-115 SPARE EBIKE EL TRANSPORTATION LOCK

Service Kit: Transportation lock for eBike EL

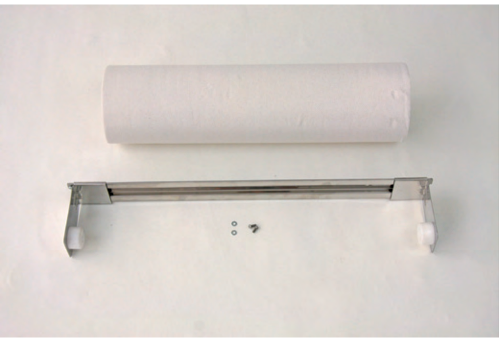
1x transportation lock eBike EL with sticker „TOP“
2x screw M10x30

2018111-091 SPARE EBIKE L&EL GUIDE BAR SET

Service Kit: Guide rail

1x guide rail4x stand-off, diam. 14, length 12
4x screw M6x30

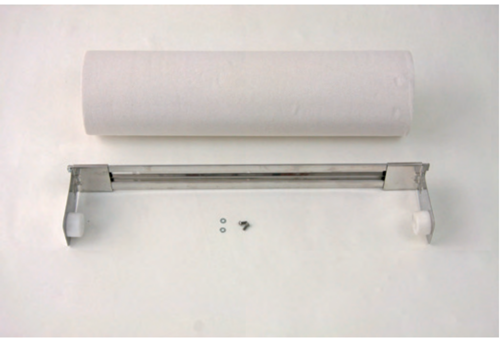
2018111-101 SPARE EBIKE L HOLDER FOR PAPER ROLL 60



Service Kit: Paper roll holder 60 cm for eBike

1x paper dispenser for eBike L
2x washer U4.3
2x screw M4x12
1x tissue roll, white

2018111-102 SPARE EBIKE EL HOLDER FOR PAPER ROLL 50



Service Kit: Paper roll holder 50 cm for eBike EL

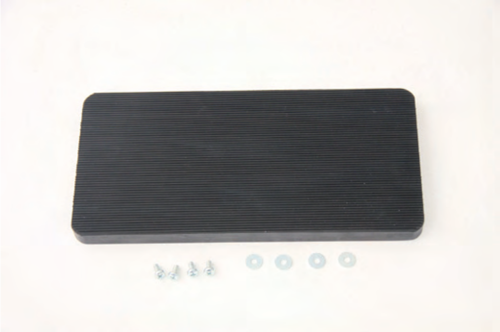
1x paper dispenser for eBike EL
2x washer U4.3
2x screw M4x12
1x tissue roll, white

2018111-110 SPARE EBIKE L&EL HOLDER FOR LEG REST

Leg rest bracket

2x spacer sheets
4x threaded disk 30x6
4x washer U8.4
4x screw M8x50 (eBike L only)
4x screw M8x70 (eBike EL only)

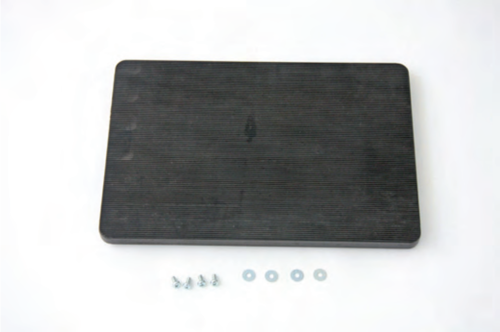
2018111-111 SPARE EBIKE L FOOTBOARD SMALL RIGHT



Service Kit: Foot board, small, for eBike L/EL

1x foot board small 370x180x20
4x screw 5x17
(with eBike L: 1 each is used on the right and left)
(with eBike EL: 1 is used on the left)
4x washer U6.4

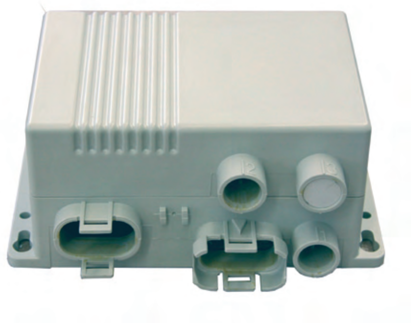
2018111-112 SPARE EBIKE EL FOOTBOARD LARGE RIGHT



Service Kit: Foot board, large, for eBike EL

1x foot board large 440x300x20
4x washer U6.4
4x screw M6x12

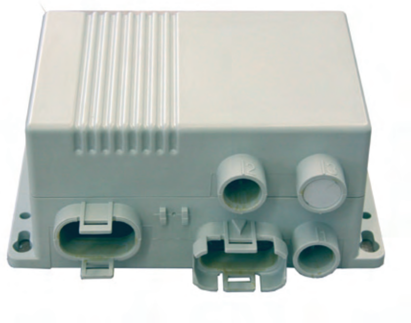
2018111-092 SPARE EBIKE L MOTOR CONTROLLER 240V



Service Kit: Motor controller magnetic 230 V for eBike L, dual-channel

1x motor controller magnetic 230V/50Hz, dual-channel
4x washer 4.3
4x nut M4

2018111-093 SPARE EBIKE L MOTOR CONTROLLER 120V



Service Kit: Motor controller magnetic 120 V for eBike L, dual-channel

1x motor controller magnetic 120V/60Hz, dual-channel
4x washer 4.3
4x nut M4

2018111-094 SPARE EBIKE EL MOTOR CONTROLLER 240V

Service Kit: Motor controller magnetic 230 V for eBike EL, three-channel

1x motor controller magnetic 230V/50Hz, three-channel
4x washer 4.34x screw M4x16

2018111-095 SPARE EBIKE EL MOTOR CONTROLLER 120V

Service Kit: Motor controller magnetic 120 V for eBike EL, three-channel

1x motor controller magnetic 120V/60Hz, three-channel
4x washer U4.3
4x screw M4x16

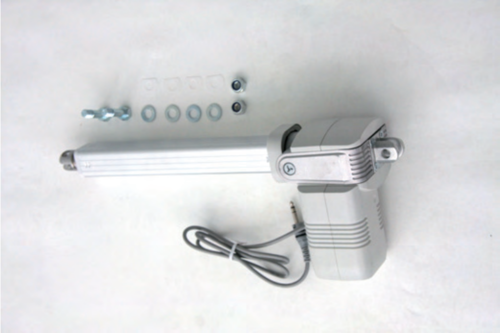
2018111-096 SPARE EBIKE L REMOTE CONTROL

Hand switch for eBike L, dual-channel

2018111-097 SPARE EBIKE EL REMOTE CONTROL

Hand switch for eBike EL, three-channel with memory

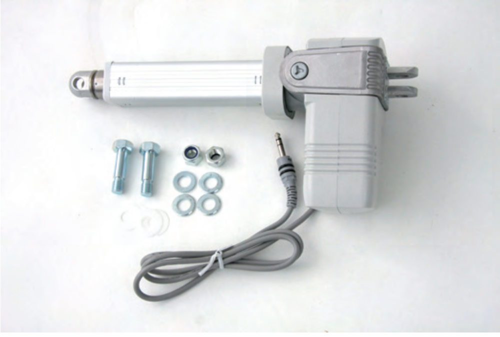
2018111-098 SPARE EBIKE L MOTOR PITCH ANGLE



Service Kit: Motor longitudinal tilt for eBike L

1x motor, longitudinal tilt (motor max. 30°) for eBike L
1x grommet black
2x stud screw SW19
4x washer U13
4x ring Hostaform D. 30
2x nut M12, self-locking

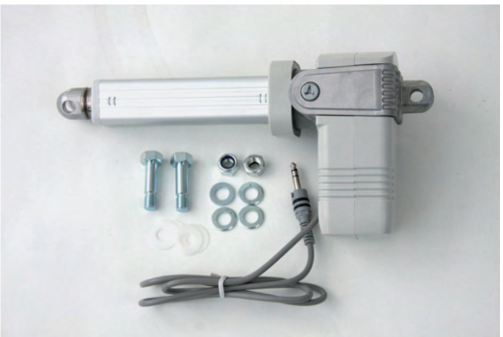
2018111-099 SPARE EBIKE EL MOTOR PITCH ANGLE



Service Kit: Motor longitudinal tilt for eBike EL

1x motor, longitudinal tilt (motor max. 10°) for eBike EL
2x stud screw SW19
2x washer U24
2x washer U13
4x ring Hostaform D. 30
2x nut M12, self-locking
3x cable tie 95 mm

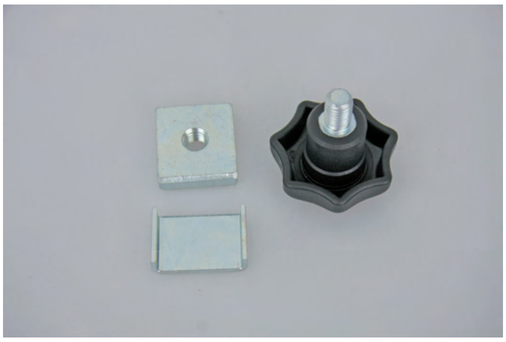
2018111-100 SPARE EBIKE EL MOTOR TRANSVERSE ANGLE



Service Kit: Motor l laterral tilt for eBike EL

1x motor, lateral tilt (motor max. 10°) for eBike EL
2x stud screw SW19
2x washer U24
2x washer U13
4x ring Hostaform D. 30
2x nut M12, self-locking
3x cable tie 95 mm

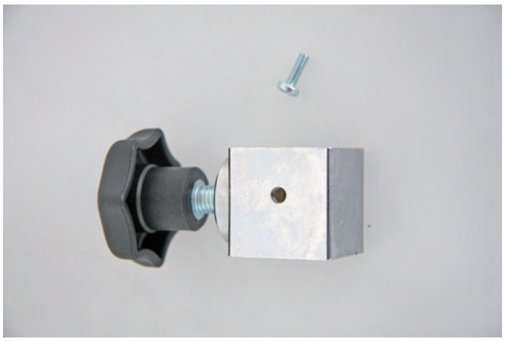
2018111-194 SPARE EBIKE II L&EL CLAMPING LEVER SET



Service Kit: Clamping lever kit for eBike L/EL

1x clamping plate 30x8x34
1x reinforcing angle 34.3x25x2
1x star knob M10x15

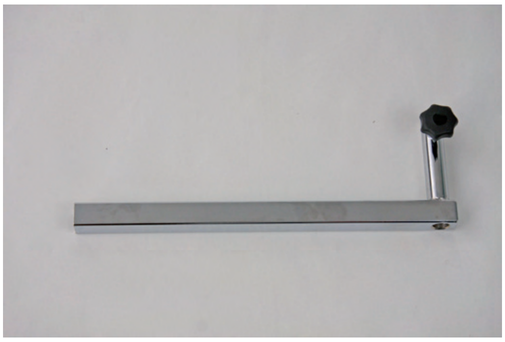
2018111-104 SPARE EBIKE L&EL CLMPG LVR SET HANDGRIP



Service Kit: Clamping lever kit for handgrip tube

1x clamping sleeve for handgrip tube, complete
2x star washer 5.3
1x screw M5x6
1x Novo Grip clamping lever M10x15

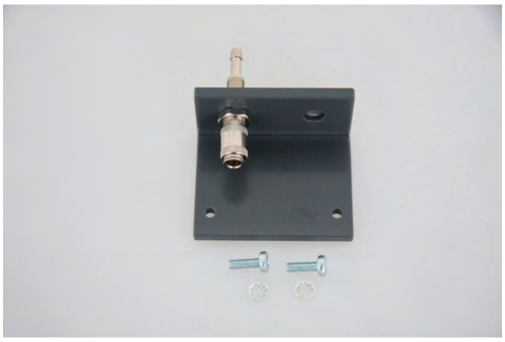
2018111-199 SPARE EBIKE II L&EL FIX TUBE W STAR HANDLE



Service Kit: Fixation tube with star knob eBike II EL

1x fixation tube for handgrip, complete
1x star knob M8x 15

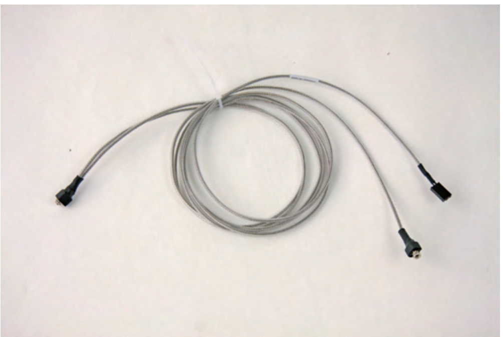
2018111-183 SPARE EBIKE II L&EL CONN RACK FOR CUFF



Service Kit: Connection angle for cuff

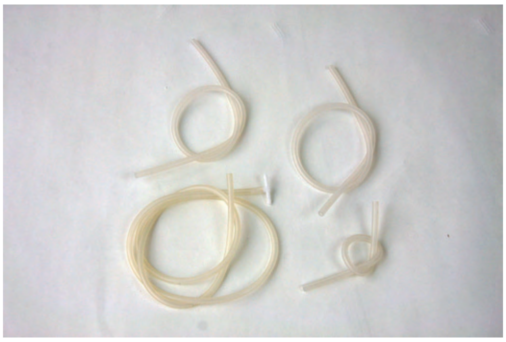
1x connection angle cuff
1x tube coupling for connector panel
2x washer Z4.3
2x screw M4x12

2018111-184 SPARE EBIKE II L&EL INTRNL MIC CABLE



Service Kit: Microphone cable, internal, incl. connections

2018111-185 SPARE EBIKE II L&EL INTERNAL TUBE SET



Service Kit: tubing kit, complete, all types of tubing

2018111-186 SPARE EBIKE II L&EL INTERNAL CABLE SET

Service Kit:patch cable kit, complete, all types of patch cables

1x patch cable 0,25m
1x patch cable 0,5m
1x patch cable 1,0m
1x patch cable 1,5m
1x patch cable 5,0m
2x RJ-45 connector
1x patch cable LRE to external speed display

2018111-159 SPARE EBIKE L&EL HANDGRIP

Service Kit: Handgrip

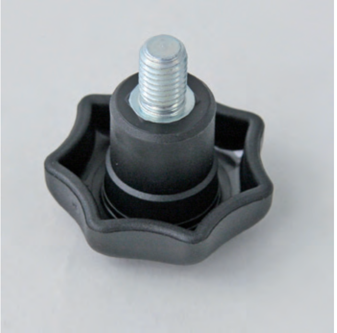
1x handgrip

2018111-200 SPARE EBIKE II L&EL STAR HANDLE M8

Service Kit: Star knob eBike L / EL M8

1x star knob M8x15

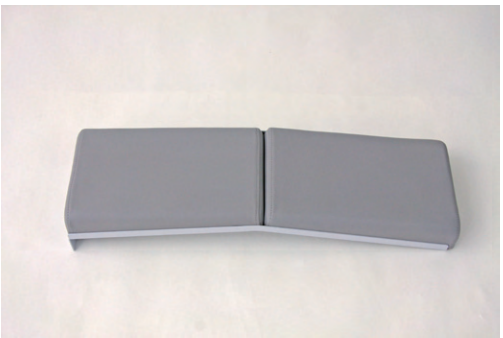
2018111-201 SPARE EBIKE II L&EL STAR HANDLE M10



Service Kit: Star knob eBike L / EL M10

1x star knob M10x15

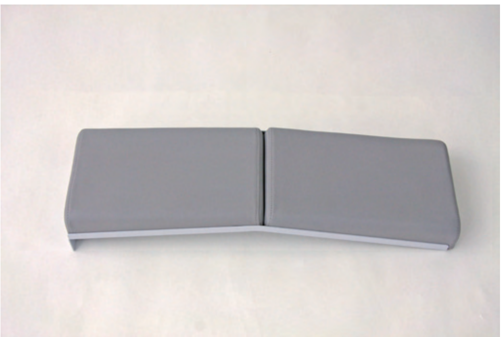
2018111-116 SPARE EBIKE EL LEG REST RIGHT



Service Kit: Leg rest, right, for eBike L / EL

1x leg rest, right, complete with upholstery, grey, mounted

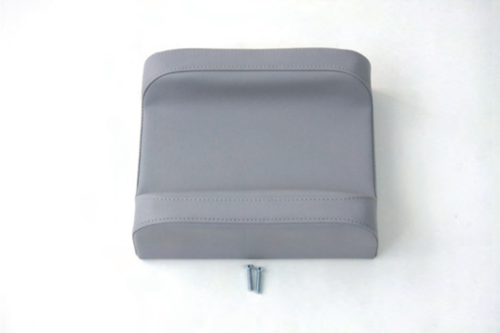
2018111-117 SPARE EBIKE EL LEG REST LEFT



Service Kit: Leg rest, left, for eBike L/EL

1x leg rest, left, complete with upholstery, grey, mounted

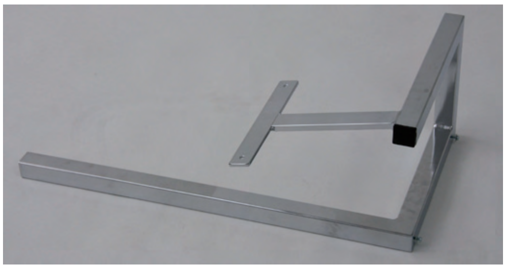
2018111-118 SPARE EBIKE L&EL HEAD CUSHION



Service Kit: Head cushion eBike L/EL

1x head cushion eBike L/EL, grey
2x screw M6x30

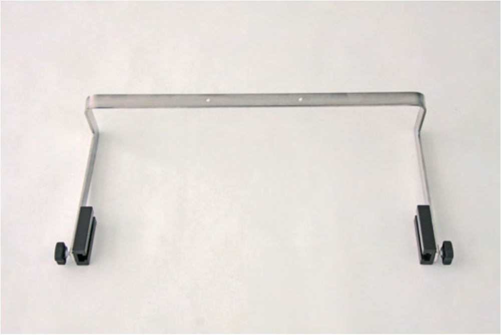
2018111-119 SPARE EBIKE EL HOLDER FOR HEAD SUPPORT



Service Kit: Holder for head rest, chromeplated

- *1x support tubing head cushion*
- *1x Novogrip clamping lever M10 x 15*
- *1x reinforcing angle 34 x 25 x 2*
- *1x clamping board 30 x 8, length 34 mm*
- *2x screw M4 x 12 (for paper roll holder)*
- *2x washer U 4.3 x 12x 1 (for paper roll holder)*
- *1x high-performance lubricant, white, approx. 5 g*

2018111-120 SPARE EBIKE L BRACKET FOR HEAD CUSHION



Service Kit: Bracket for head cushion (eBike L only)

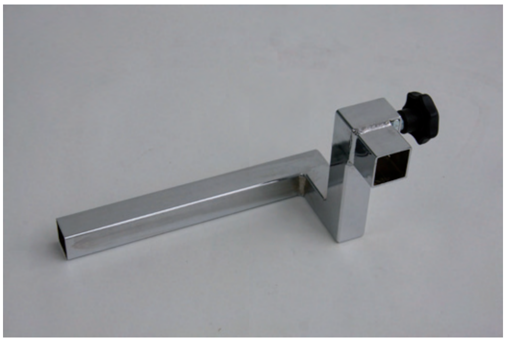
- *1x bracket for head cushion eBike L*
- *2x clamp with star knob M8x20*

2018111-122 SPARE EBIKE EL ARMPIT CUSHION

Service Kit: Armpit cushion, grey (eBike EL only)

- *1x armpit cushion, grey (eBike EL only)*
- *1x screw M8x25*

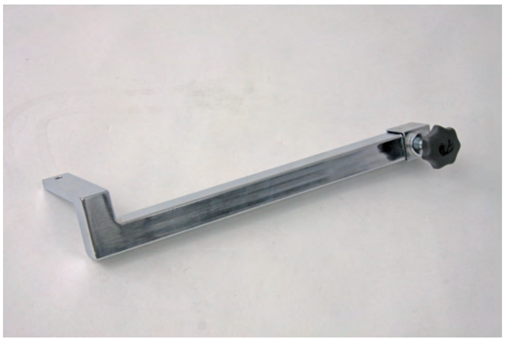
2018111-195 SPARE EBIKE II EL GUIDE TUBE ARMPIT SUPPORT



Service Kit: Guide tube armpit support (eBike II EL only)

- *1x guide tube armpit support*
- *2x star knob M10x15*
- *2x reinforcing angles 34x25x2*
- *2x clamping board 30 x 8, length 34 mm*
- *1x retaining screw M8x20*
- *1x high-performance lubricant, white, approx. 5 g*

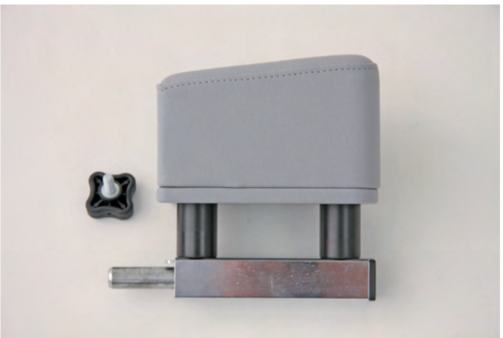
2018111-196 SPARE EBIKE II EL FIX TUBE ARMPIT



Service Kit: Support tubing armpit (eBike II EL only)

1x support tubing for armpit
1x star knob M10x15
1x reinforcing angle 34x25x2
1x clamping board 30 x 8, length 34 mm
1x high-performance lubricant, white, approx. 5 g

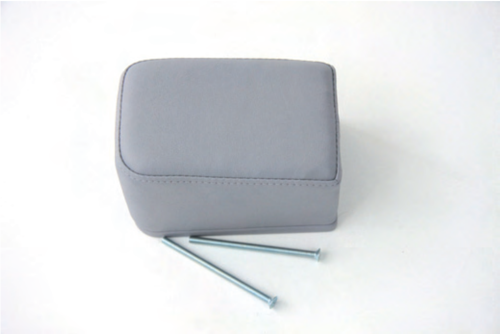
2018111-125 SPARE EBIKE EL HIP SUPPORT COMPLETE



Service Kit: Hip cushion, grey (eBike EL only)

1x hip cushion, grey, mounted on support
1x star knob

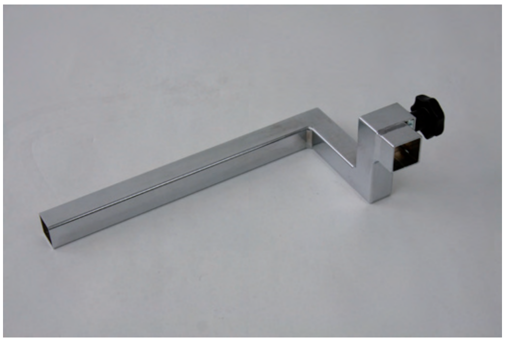
2018111-126 SPARE EBIKE EL HIP CUSHION SINGLE



Service Kit: Hip cushion, grey (eBike EL only)

1x hip cushion, grey
2x screw

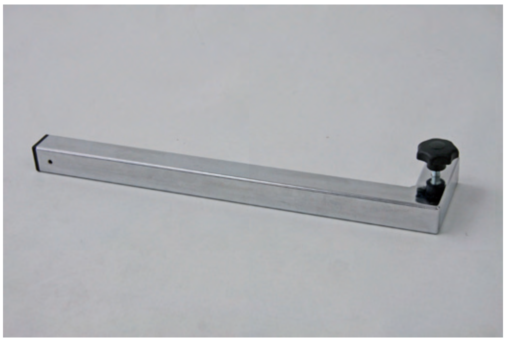
2018111-197 SPARE EBIKE II EL GUIDE TUBE HIP SUPPORT



Service Kit: Guide tube hip cushion (eBike II EL only)

1x guide tube hip support
2x clamping plate 30x8, length 34
2x reinforcing angle 34x25x2
2x star knob M10x15
1x retaining screw M8x20

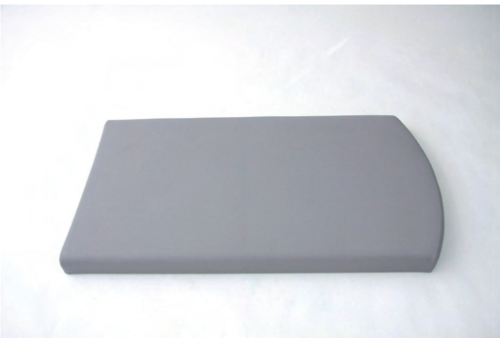
2018111-198 SPARE EBIKE II EL FIX TUBE HIP SUPPORT



Service Kit: support tubing hip support (eBike II EL only)

1x support tubing hip support
1x star knob M10 x 15
1x reinforcing angle 34 x 25 x 2
1x clamping board 30 x 8, length 34 mm
1x high-performance lubricant, white, approx. 5 g1x star knob M8x20

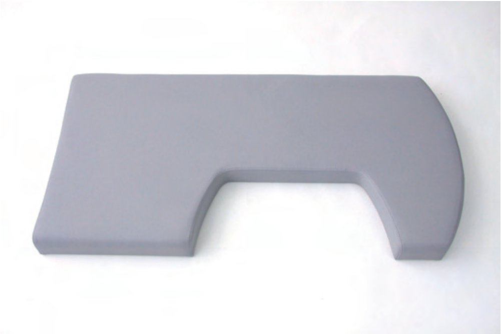
2018111-129 SPARE EBIKE L COUCH CUSHION



Service Kit: Upholstery couch surface, grey, for eBike L

1x upholstery couch cushion, grey, for eBike L
6x screw M5x60

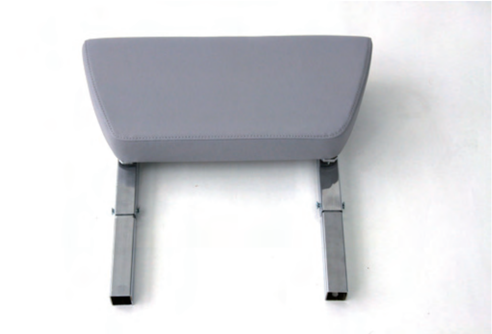
2018111-130 SPARE EBIKE EL COUCH CUSHION



Service Kit: Upholstery couch surface, grey, for eBike EL

1x upholstery couch cushion, grey, for eBike EL
5x screw M5x60

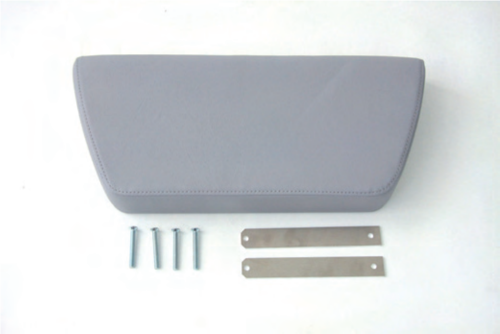
2018111-131 SPARE EBIKE EL DROP SECTION COMPLETE



Service Kit: Drop section, complete with holder (eBike EL only)

1x drop section, complete with holder (eBike EL only)
1x retaining screw M8x20

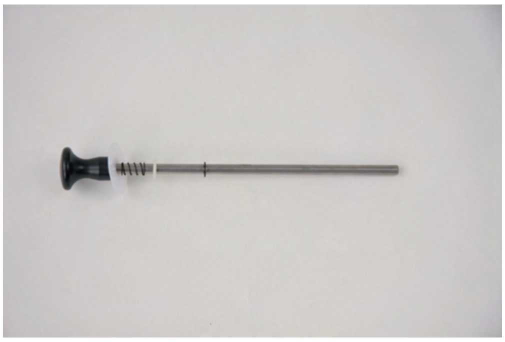
2018111-132 SPARE EBIKE EL DROP CUSHION SINGLE



Service Kit: Drop cushion, grey (eBike EL only)

1x drop cushion, grey
4x screw M6x50

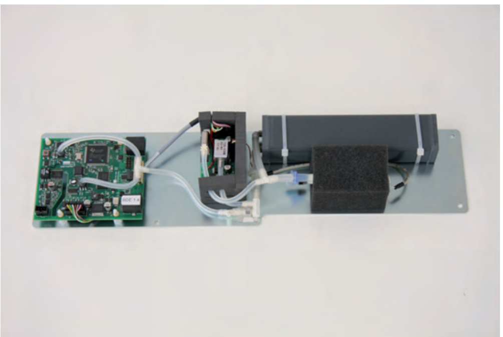
2018111-133 SPARE EBIKE EL LOCK FOR DROP SECTION



Service Kit: Lock for drop section

1x lock for drop section
1x installation material kit

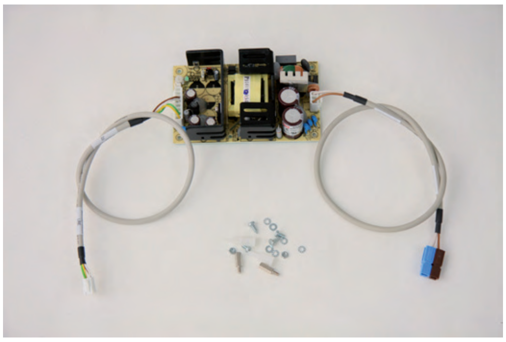
2018111-187 SPARE EBIKE II L&EL BP MODULE



Service Kit: 1xbloodpressure module

1x BP module, assembled
incl. PCB BDE

2018111-188 SPARE EBIKE II L&EL POWER SUPPLY

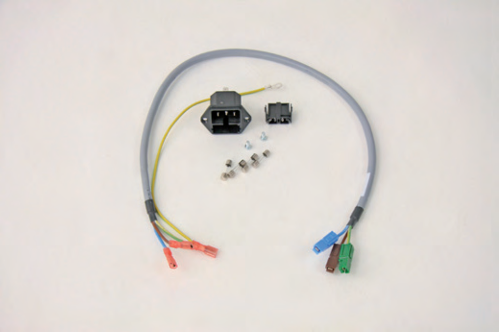


Service Kit: power supply module for eBike II L / EL

1x power supply RPS 50/60 Hz
1x interface cable connecting LRE to power supply RPS
1x cable from power supply to modular connector
2x spacer 12,7 mm
2x screw 3,5x9,5
2x spacer M 3 12 mm
4x washer 3,2x6 mm
2x washer 3,2x7 mm

2x nut M3

2018111-189 SPARE EBIKE II L&EL MAINS CONNECTOR SET



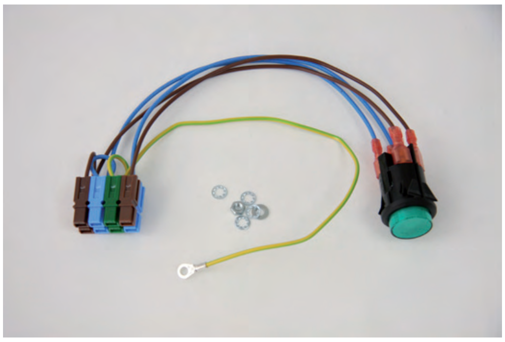
Service Kit: Mains connection kit 120V / 230 V

1x cold-appliance connector, KEA socket
1x cold-appliance connector, KEA drawer for 2 fuses
1x cable KEA socket to modular connector
2x micro fuse 3.0 A, slow-blow (120V models)
2x micro fuse 2.0 A, slow-blow (240 V models)
2x screw M3x6

2018111-075 SPARE EBIKE CABLE MAINS EURO 5M

Power cord, grey, length 5 m, German connector

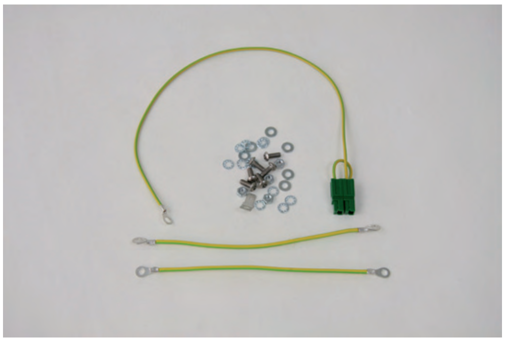
2018111-190 SPARE EBIKEL II EL POWER SWITCH



Service Kit: power switch, complete, for eBike II L/EL

1x switch ON/OFF, round, illuminated
5 cables (different colours)
mounting material

2018111-191 SPARE EBIKE II L&EL EARTH CABLE SET



Service Kit: Earth cable, kit for eBike II L/EL

2x earth cable 150 mm
3x screw M4x10 torx
5x washer 2,3x9
10x star washer 4,3x8
1x earth cable between modular connector and chassis
4x nut M4
1x connector 6.3 mm

2018112-069 MNL SVCE EBIKE II

Servicing Instructions eBike II English

2017911-010 SPLY EBIKE CUFF ADULT STD TUBE 130CM

BP cuff, adults, 130 cm tubing

2017911-011 SPLY EBIKE CUFF ADULT STD TUBE 200CM

BP cuff, adults, 200 cm tubing

2017911-012 SPLY EBIKE CUFF ADULT LARGE TUBE 130CM

BP cuff, adults, long version, 130 cm tubing

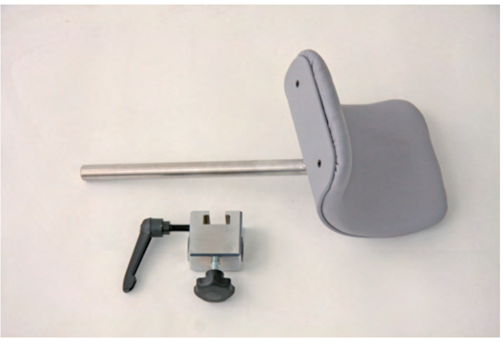
2017911-013 SPLY EBIKE CUFF ADULT LARGE TUBE 200CM

BP cuff, adults, long version, 200 cm tubing

2017911-014 SPLY EBIKE CUFFADULT SMALL TUBE 130CM

BP cuff, adults, small version, 130 cm tubing

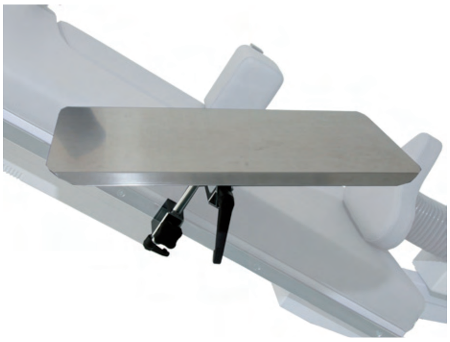
2017911-037 SPLY EBIKE L&EL ARM REST W HOLDER



Arm rest with holder, ebike L/EL

1x upholstery arm rest L/EL, grey
1x holder OR rail L/EL
1x Novo Grip clamping lever M8x25
1x star knob M8x20

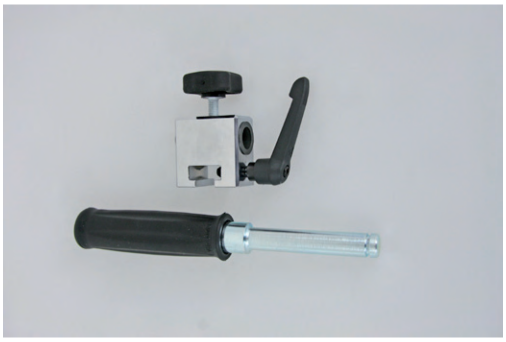
2017911-038 SPLY EBIKE L&EL ARM REST SWVL W HOLDER



Swiveling arm rest with holder, ebike L/EL

1x arm rest support L/EL
1x holder for arm rest, chromeplated
1x Novo Grip clamping lever M10x20
1x holder OR rail L/EL
2x Novo Grip clamping lever M8x25

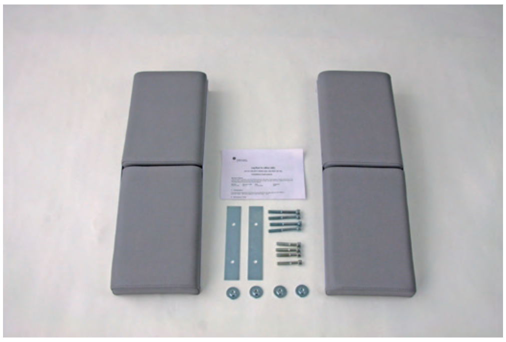
2017911-039 SPLY EBIKE L&EL HANDGRIP W HOLDER



Handgrip with holder, ebike L/EL

1x handgrip with PVC holder, black
1x holder OR rail L/EL
1x Novo Grip clamping lever M8x25
1x star knob M8x20

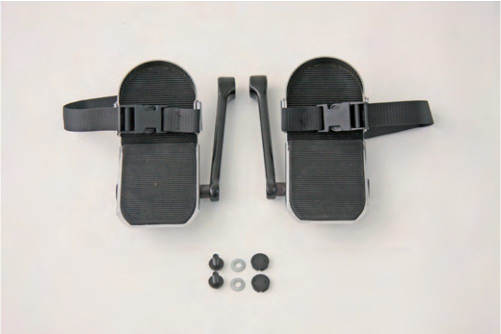
2017911-040 SPLY EBIKE L&EL LEG REST SET R/ L



Leg rest set, right and left, for ebike L/EL

1x leg rest left, incl. all accessories
1x leg rest right, incl. all accessories
1x retaining clamp for leg rests with 2 screws M4x12
2x spacer sheets
4x threaded disk 30x6
4x washer U8.4
4x screw M8x50 (required for eBike L only)
4x screw M8x70 (required for eBike EL only)

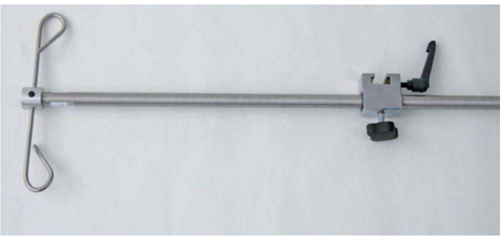
2017911-041 SPLY EBIKE L&EL PEDAL SHOE SET R/L



Pedal shoe, left + right, complete

2x combi-slotted screw M8x1x18
2x lock washer
2x end cap

2017911-042 SPLY EBIKE II L&EL INFUSION HOLDER



Infusion holder, incl. fastening device

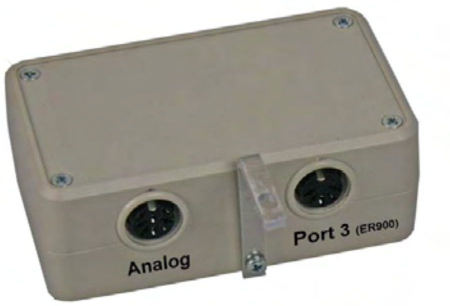
1x infusion stand for rail eBike L/EL
1x Novo Grip clamping lever
1x star knob

2017911-130 SPLY EBIKE II USB DRIVER CD

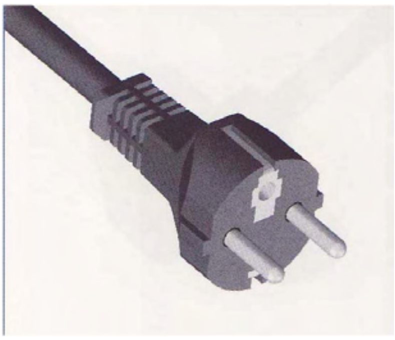
USB Driver for eBike II
REF 2017911-130 Rev x
Rx only

2017911-131 SPLY EBIKE II USB CABLE 5M

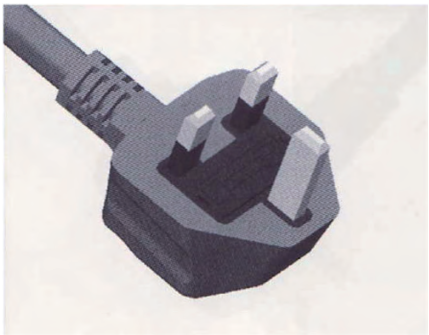
2017911-132 SPLY EBIKE II COM MODULE


Analog
Port 3 (ER900)

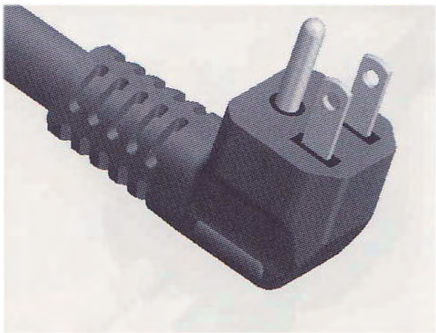
2017911-150 SPLY EBIKE L&EL PWR CORD F EURO



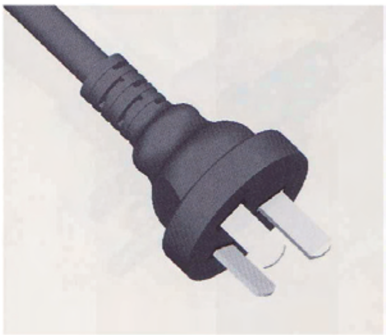
2017911-151 SPLY EBIKE L&EL PWR CORD G3 UK



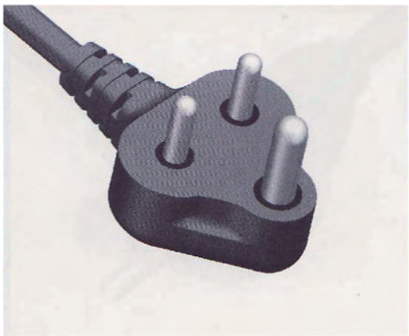
2017911-152 SPLY EBIKE L&EL PWR CORD B US



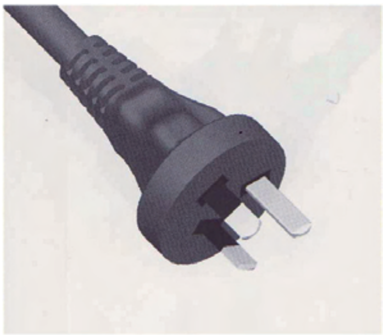
2017911-153 SPLY EBIKE L&EL PWR CORD I3C CHINA



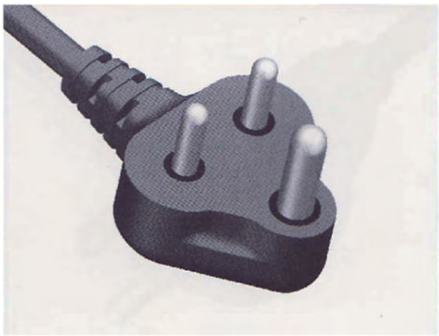
2017911-154 SPLY EBIKE L&EL PWR CORD M3 STH AFRICA



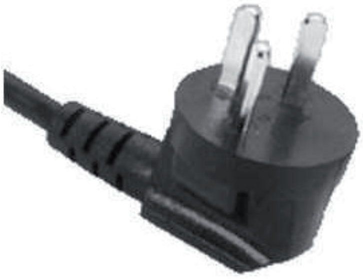
2017911-155 SPLY EBIKE L&EL PWR CORD I3 AUSTRALIA



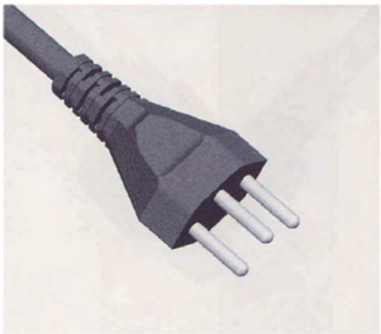
2017911-156 SPLY EBIKE L&EL PWR CORD D INDIA



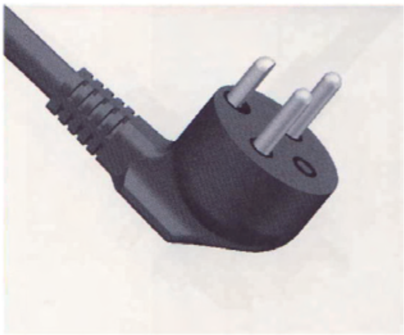
2017911-157 SPLY EBIKE L&EL PWR CORD H ISRAEL



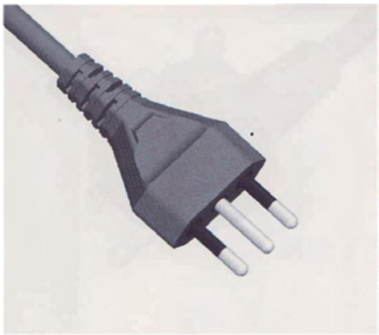
2017911-158 SPLY EBIKE L&EL PWR CORD J SWITZERLAND



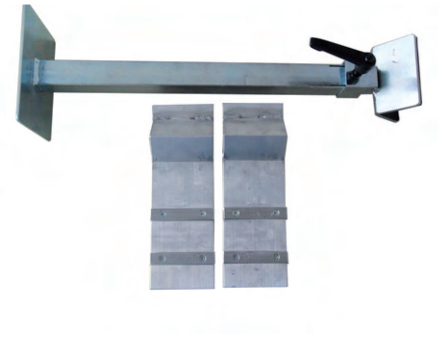
2017911-159 SPLY EBIKE L&EL PWR CORD K DENMARK



2017911-160 SPLY EBIKE L&EL PWR CORD L ITALY



2018111-134 SPARE EBIKE L&EL SUPPORT FOR CALIBRATION



Service Kit: Device Support for Calibration

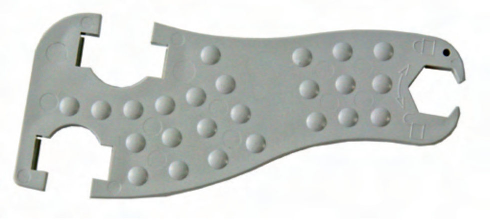
1 x calibration stay
2 x calibration support

2018111-135 SPARE EBIKE L&EL CALIBRATION WEIGHT 8KG

Service Kit: Calibration Weight

1 x weight (8 kg)
1 x hook

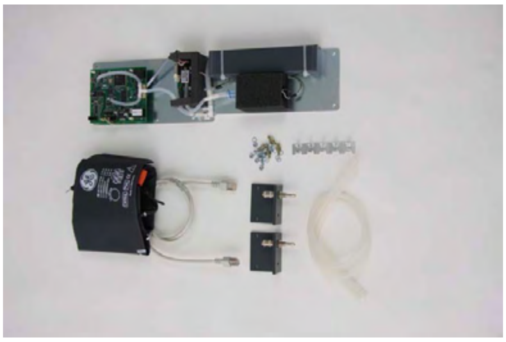
2018111-203 SPARE EBIKE L&EL MOTOR CAB TOOL



Service Kit: Tool for disassembly of motor cables

1 x special tool

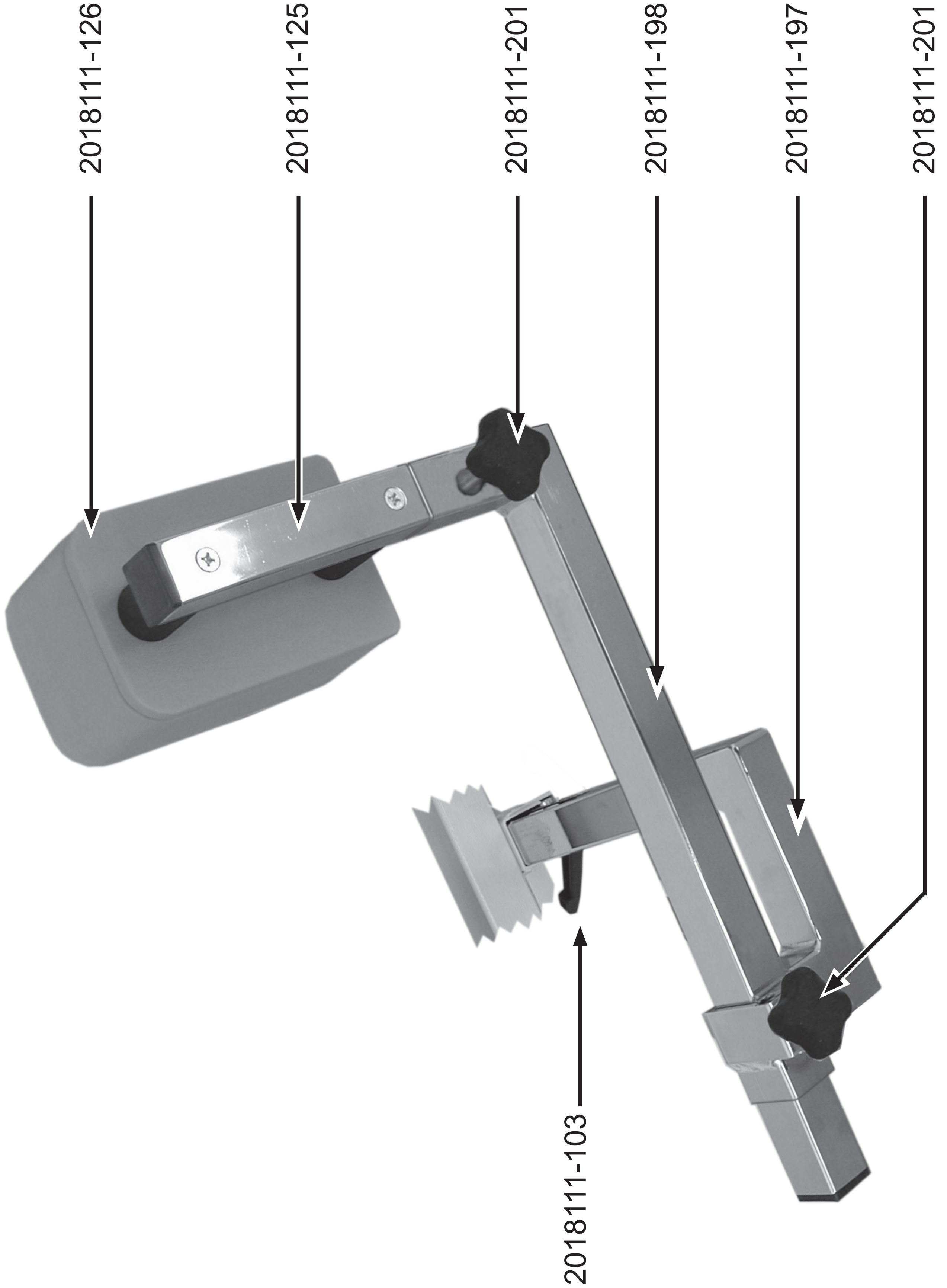
2017911-134 ERGOMETER EBIKE II L&EL BP ADD-ON KIT



Service Kit: Retrofit Kit Blood Pressure Module for eBike II L / EL

1x bloodpressure module eBike II L/EL, assembled
4x spacer M4x5
4x washer 4,3x12
4x nut M4
6x screw M3x12mm
1x patch cable 0,25m
2x mounting anglel BDE eBike II L/EL
2x tube connector Rectus

4x screw M4x12
2x tube 3x2 550mm
5x aluminium clips
1x BP cuff, standard
1x Addendum for BP Module retrofit kit


2018111-126
2018111-125
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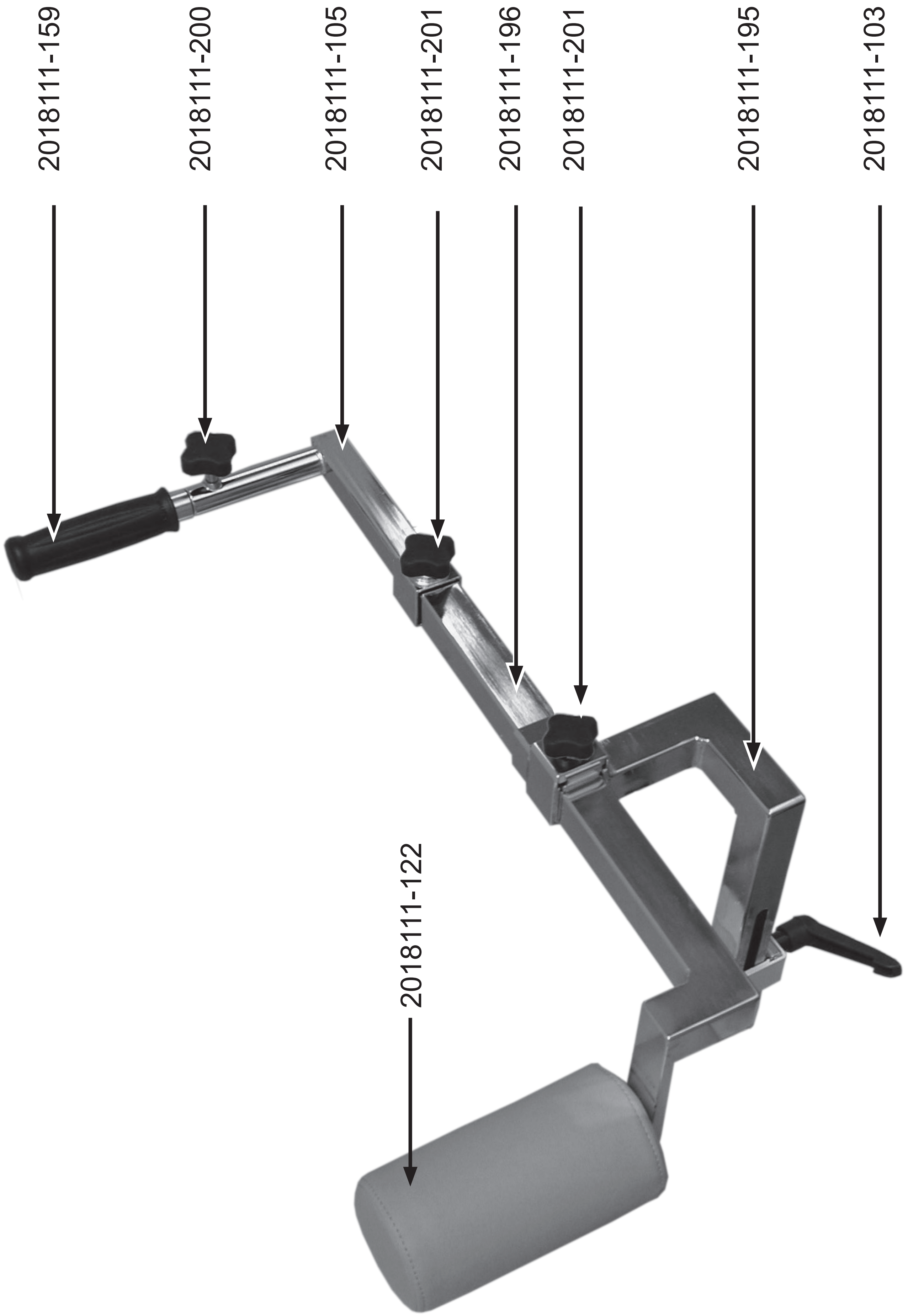
2018111-198
2018111-197
2018111-201
2018111-103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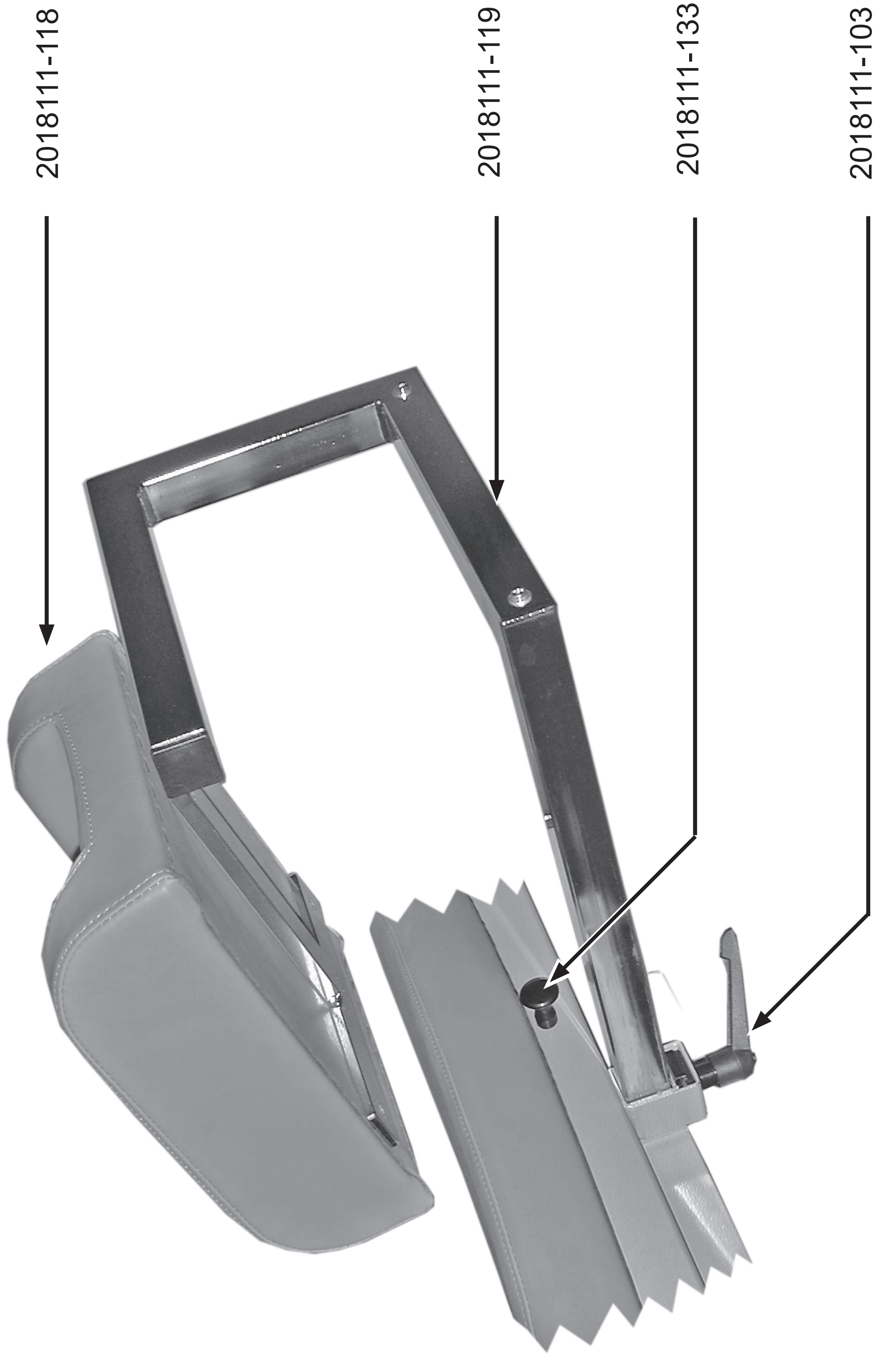

2018111-118
2018111-119
2018111-133
2018111-103

Technical Specifications eBike II basic / comfort

Model	modular ergometer system eBike basic / comfort
Operating Mode	continuous operation
Power	100 - 240 V / 50 - 60 Hz (60 VA max.) **specification power cord US:** SJT 2xAWG16 125 V / 10 A „hospital" or „ hospital grade" **specification internal backup battery:** IEC: CR 2032 / 3 V 230 mAh
Braking Principle	computer-controlled eddy current brake with torque measurement; speed independent to DIN VDE 0750-0238
Load Range	6 - 999 watts, speed independent (see diagrams)
Speed Range	30 to 130 RPM
Deviation of Measured Load	to DIN VDE 0750-0238
Load Increments	user programmable
Internal Protocols	• 5 fixed incremental exercise test protocols (e.g. WHO) • 10 user-programmable protocols • manual load control
Permitted Patient Weight	160 kg
Saddle Height Adjustment	continuous, for patients between 120 cm and 210 cm ergoselect 100: manually adjustment of saddle height ergoselect 200: electrical adjustment of saddle height with digital readout
Handlebar Adjustment	for patient heights between 120 cm and 210 cm continuous handlebar adjustment over 360° ergoselect 200: height of handlebar adjustable
Crank Length	170 mm (cranks with adjustable length are optional accessories)
Displays	LCD: 68 x 34 mm, 128 x 64 pixels additional LED display for speed (RPM)

Interfaces	PORT 1 (DSUB-9-pole): digital remote control RS232 by PC or ECG recorder, USB: digital remote control by PC (driver required) ANALOG (optional): analog remote control by ECG recorder
Dimensions, Weight	length: 900 mm width: 460 mm (width of handlebar: approx. 575 mm) height: 900 mm to 1350 mm weight: approx. 68 kg
Safety Standards	DIN EN 60601-1, DIN EN 60601-1-2, DIN VDE 0750-238
Protection Class / Degree of Protection	II / B (to DIN EN 60601-1)
MDD Classification	class IIa to 93/42 EEC
RF Emission	class B to DIN EN 55011 / 5.0 DIN EN 60601-1-2
Environment	**operation:** temperature: +10 to +40 °C (50 to 104 °F) rel. humidity: 30 to 75%, no condensation atmospheric pressure: 700 to 1060 hPa **transport and storage:** temperature: -20 to +70 °C (-4 to +158 °F) rel. humidity: 10 to 90%, no condensation atmospheric pressure: 500 to 1060 hPa

Technical Specifications eBike II L

Model	eBike II L / external terminal
Operating Mode	continuous operation
Power	**version 1:** 220 - 240 V / 50 - 60 Hz (250 VA max.) fuses: 2 x 2,0 time lag **version 2:** 110 - 120 V / 50 - 60 Hz (250 VA max.) fuses: 2 x 3,0 time lag **specification power cord US:** SJT 3xAWG16 125 V / 10 A „hospital" or „ hospital grade" **specification internal backup battery:** IEC: CR 2032 / 3 V 230 mAh
Braking Principle	computer-controlled eddy current brake with torque measurement; speed independent to DIN VDE 0750-0238
Load Range	6 - 999 watt, speed independent
Speed Range	30 to 130 RPM (see characteristic)
Deviation of measured load	to DIN VDE 0750-0238
Load Increments	user programmable
Internal Protocols	• 5 fixed incremental exercise test protocols (e.g. WHO) • 10 user-programmable protocols • manual load control
Permitted Patient Weight	160 kg
Saddle Adjustment	motor-driven, continuous adjustment for heights between 120 cm and 210 cm
Couch Surface Angle	motor-driven, continuous adjustment, 0 to 45°
Crank Length	170 mm (adjustable length cranks available as optional accessories)
Displays	LCD: 68 x 34 mm, 128 x 64 pixels additional LED display for speed (RPM)

Interfaces	PORT 1 (DSUB-9-pole): digital remote control RS232 by PC or ECG recorder, USB: digital remote control by PC (driver required) ANALOG (optional): analog remote control by ECG recorder
Dimensions, Weight	minimum: 800 x 2350 mm (W x L) (couch at 45°, headrest retracted) maximum: 800 x 2520 mm (W x L) (couch at 0° (horizontal), headrest extended) weight: approx. 110 kg
Safety Standards	DIN EN 60601-1, DIN EN 60601-1-2, DIN VDE 0750-238
Protection Class / Degree of Protection	I / B (to DIN EN 60601-1)
MDD Classification	class IIa to 93/42 EEC
RF Emission	class B to DIN EN 55011 / 5.0 DIN EN 60601-1-2
Environment	**operation:** temperature: +10 to +40 °C (50 to 104 °F) rel. humidity: 30 to 75%, no condensation atmospheric pressure: 700 to 1060 hPa **transport and storage:** temperature: -20 to +70 °C (-40 to +158 °F) rel. humidity: 10 to 90%, no condensation atmospheric pressure: 500 to 1060 hPa

Technical Specifications eBike II EL

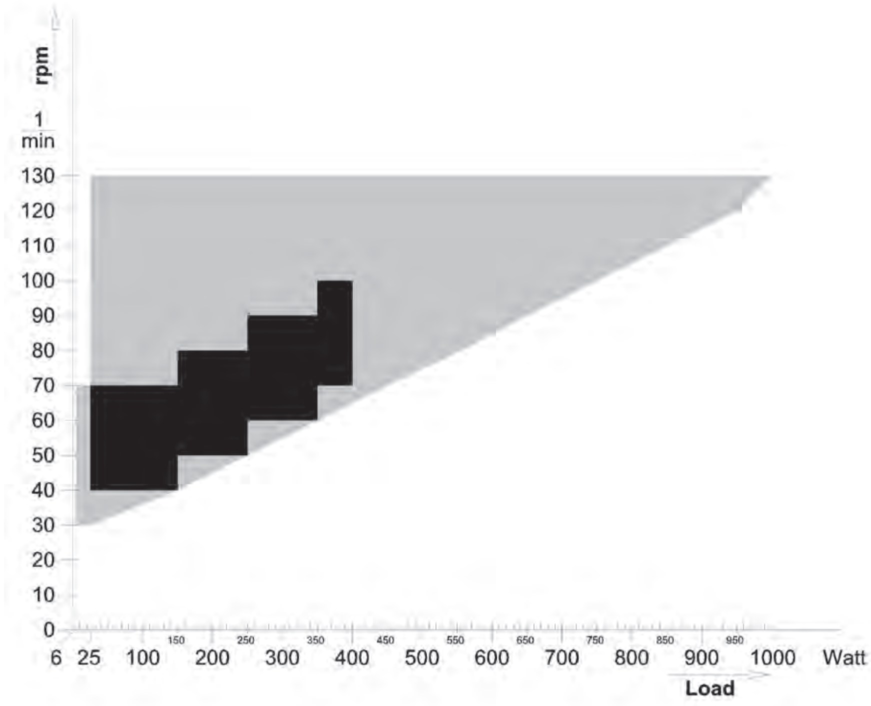
Model	eBike II EL / ext. terminal
Operating Mode	continuous operation
Power	**version 1:** 220 - 240 V / 50 - 60 Hz (250 VA max.) fuses: 2 x 2,0 time lag **version 2:** 110 - 120 V / 50 - 60 Hz (250 VA max.) fuses: 2 x 3,0 time lag **specification power cord US:** SJT 3xAWG16 125 V / 10 A „hospital“ or „ hospital grade“ **specification internal backup battery:** IEC: CR 2032 / 3 V 230 mAh
Braking Principle	computer-controlled eddy current brake with torque measurement; speed independent to DIN VDE 0750-0238
Load Range	6 - 999 watt, speed independent
Speed Range	30 to 130 RPM (see characteristic)
Deviation of measured load	to DIN VDE 0750-0238
Load Increments	user programmable
Internal Protocols	**Control Terminal P:** • 5 fixed incremental exercise test protocols (e.g. WHO) • 10 user-programmable protocols • manual load control **Control Terminal K:** • 5 fixed incremental exercise test protocols (e.g. WHO) • 10 user-programmable protocols • manual load control • 4 fixed test protocols (e.g. PWC) • 10 user-programmable training protocols
Permitted Patient Weight	140 kg
Saddle Adjustment	motor-driven, continuous adjustment for heights between 120 cm and 210 cm
Couch Surface Angle	motor-driven, continuous adjustment, 0 to 45°
Crank Length	170 mm (adjustable length cranks available as optional accessories)

Displays	LCD: 68 x 34 mm, 128 x 64 pixels (Control Terminal P) 115 x 88 mm, 320 x 240 pixels (Control Terminal K) additional LED display for speed (RPM)
Interfaces	PORT 1 (DSUB-9-pole): digital remote control RS232 by PC or ECG recorder, remote start of ECG recorder (optional) USB: digital remote control by PC (driver required)
Dimensions, Weight	minimum: 800 x 2100 mm (W x L) (head rest retracted) maximum: 1200 x 2600 mm (W x L) (swiveled 0°, headrest extended) weight: approx. 140 kg
Safety Standards	DIN EN 60601-1, DIN EN 60601-1-2, DIN VDE 0750-238
Protection Class / Degree of Protection	I / B (to DIN EN 60601-1)
MDD Classification	class IIa to 93/42 EEC
RF Emission	class B to DIN EN 55011 / 5.0 DIN EN 60601-1-2
Environment	**operation:** temperature: +10 to +40 °C (50 to 104 °F) rel. humidity: 30 to 75%, no condensation atmospheric pressure: 700 to 1060 hPa **transport and storage:** temperature: -20 to +70 °C (-40 to +158 °F) rel. humidity: 10 to 90%, no condensation atmospheric pressure: 500 to 1060 hPa

Technical Specifications eBike II Blood Pressure Module

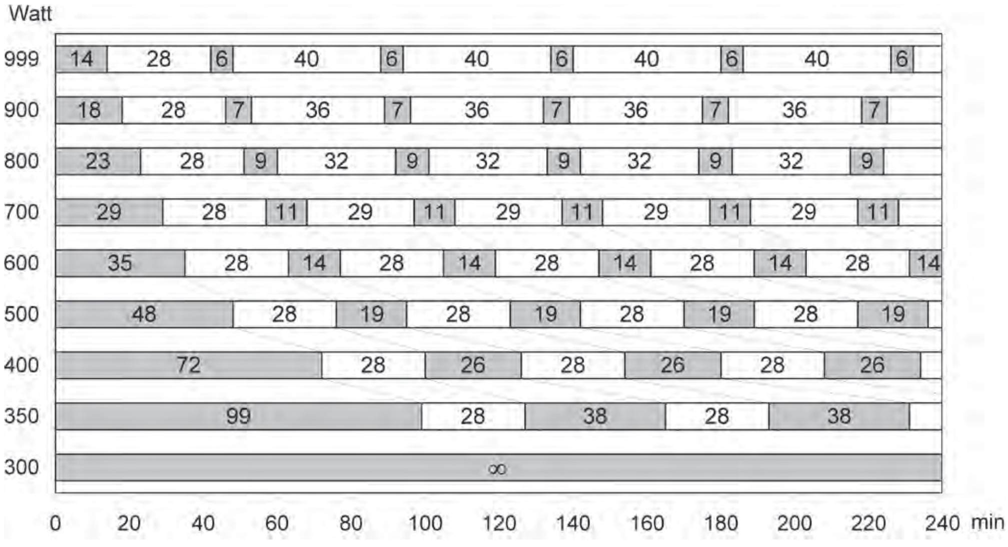
Measuring Method:	auscultatory method, oscillometric; for resting BP, the results from both measurements are compared for plausibility
Measuring Range	systolic pressure: 40 to 280 mmHg diastolic pressure: 40 to 280 mmHg pulse rate: 35 to 230 P/min
Measurement Error	pressure readout error: +/- 3 mmHg readout resolution: +/- 1 mmHg
Inflation Pressure	300 mmHg max.; during inflation the inflation pressure automatically adapts to patient's BP
Inflation Rate	between approx. 6 seconds (to 140 mmHg) and approx. 18 seconds (to 300 mmHg)
Max. Cuff Pressure	300 mmHg
Cuff Deflation Method	pulse-dependent deflation rate approx. 3 mmHg/beat or approx. 3 mmHg/s
Calibration	calibration with external pressure meter
Artifact Rejection	automatic artifact rejection and comparison of the resting BP readings from both methods for plausibility

FAMILY OF CHARACTERISTICS OF THE BRAKING TORQUE CONTROL RANGE



black:	speed-independent range to DIN VDE 0750-0238
black + grey:	speed-independent range of the eBike II ergometer

FAMILY OF CHARACTERISTICS OF LOAD DURATION DUE TO IEC 60601-1



Under permanent load conditions the shown load and pause times (white) have to be observed.

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